Students' Motivation and the Challenges Instructors Face Incorporating ICT Based Instructional Materials

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ABSTRACT

Motivation is part of what makes a student successful, it affects how they respond to materials presented in a learning environment. Instructional materials are a big part of learning so it should accommodate every student need and also motivate students to read further. It is necessary for instructors to know how to motivate their students. ICT has become an essential tool in education therefore instructors should integrate it into the instructions although, they may face challenges. This thesis aims to examine the motivational influence of ICT based instructional materials on students and the challenges faced by instructors while producing these instructions.

The study was designed as a case study in mixed-method approach. 187 subjects participated in the study containing 15 instructors and 172 students. A close-ended questionnaire was used to collect data from the students and face-to-face interview session was conducted to collect data from the instructors. It was found that the motivation of students on their instructional material is slightly above average. The students are not so motivated because they feel their instructional materials are abstract and unappealing. From the instructors, it was found that time and resources are the main problem faced in incorporating ICT into instructional materials.

Keywords: ICT, Instructional materials, Motivation.

ÖZ

Bir öğrenciyi başarılı kılan şeylerden biri de motivasyondur. Bu durum öğrenme ortamında sunulan materyallere nasıl tepki verdiğini de etkilemektedir. Öğretim materyalleri öğrenimin büyük bir parçasıdır. Bu yüzden de bu materyaller her öğrencinin ihtiyacını karşılamalıdır. Ayrıca, öğrencileri daha da fazla okumak için motive etmelidir. Eğitmenler öğrenci motivasyonunu artırmada bazı zorluklar yaşamaktadırlar. Bu tez çalışmasında, BİT'e dayalı öğretim materyallerinin öğrenciler üzerindeki motivasyona etkisi ve eğitmenlerin materyal üretiminde karşılaştığı zorlukları incelemek amaçlanmıştır.

Çalışma karma yöntemli bir durum çalışması olarak tasarlanmıştır. Çalışmanın araştırma grubu 15'i eğitmen ve 172'si öğrenci olmak üzere 187 kişiden oluşturulmuştur. Veriler, öğrencilerden anket, eğitmenlerden ise görüşme yöntemi ile toplanmıştır. Öğrencilerin öğretim materyali üzerindeki motivasyonu orta düzeyde tespit edilmiştir. Ayrıca, öğrencilerin öğretim materyallerinin soyut ve doğrusal olduğunu hissettikleri için fazla motive olamadıkları belirlenmiştir. Ayrıca, öğretmenlerin sadece zaman ve kaynaklar konusunda problem yaşadıkları belirlenmiştir.

Anahtar kelimeler: BİT, Öğretim Materyalleri, Motivasyon.

TO MY FATHER

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LIST OF ABBREVIATIONS

ARCS	Attention, Relevance, Confidence, Satisfaction
CD	Compact Disc
DVD	Digital Versatile Disc
ICT	Information and Communication Technologies
IMMS	Instructional Materials Motivation Survey
IT	Information Technology
SPSS	Statistical Package for the Social Sciences

Chapter 1

INTRODUCTION

Motivation is an essential criterion that is required when engaging in a task. It is a factor that stirs up and guides performance (Duttweiler, 1986). Motivation has a great impact on the outcome that is produced in whatever is done and the same can be said about its effect on learning. Motivation is a part of our educational experience from preschool to higher education, learning a new language or skill.

Motivation is necessary for student whether it is self-motivation (intrinsic motivation) or an external factor (extrinsic motivation), it is required for success. When a person is intrinsically motivated, it means there is no apparent reward gotten from the task except for the satisfaction derived from it, on the other hand when extrinsically motivated there is an anticipation of a reward (Deci, 1975). Using the school setting as an example, when students select an elective course, those who choose a course because of their interest in the related subject or want to know more about that subject are said to be intrinsically motivated. Whereas, students who select a course because it is seen as easy to pass or there is no much course workload are extrinsically motivated.

Students' attitude affects how they respond to materials presented in a learning environment. Research has shown that the quality of instruction relates to the amount of time students require to learn and the amount of time they are willing to give in that learning process. Educators are concerned about effective teaching that will involve students in meaningful learning (Koehler, et.al, 2004). Dillon and Zhu

(1997) defined instruction is the transfer of information from teacher to student in an organized and sequential order. Instructional materials are important and should be able to adapt to different learning styles by accommodating every student need. McLoughlin (1999) noted that instructional materials should attend to individual needs. The higher the quality of instruction, the more direct the relationship to how much time students will need to learn the lesson objective and the more student motivation can be directed towards learning.

Raby (2007) stated that the pedagogical dimension of artifacts, the learners' individual characteristics and also technical dimension are important for motivation. Technology is becoming an indispensable asset in every area of our lives (from our education, work place, entertainment to personal lives). Information and Communication Technologies (ICT) have turned into one of the basic and essential component of our todays' society (Daniels, 2002). Education has been influenced by ICT in many areas including teaching, learning, and also research (Yusuf, 2005). Today, ICT is an essential part of education, through e-learning, instructional materials and multiple platforms for learning.

ICT enhances the standard of education in many ways; it raises students' motivation and commitment, it facilitates basic and new skills, and it also aids teacher training. One major advantage of ICT in education is the ability to access countless resources from many locations. Through the internet and the use of modern communication technologies, libraries, journals, laboratories, media houses and numerous source of information can be easily accessed. All these technology will not be very useful if the user cannot use them or face constant barriers when using them. Khan (2003) describes ICT based systems useful to learners when they are characterized as easily accessible, well designed, learner-centered, affordable,

efficient, facilitates learning environment and flexible. All these resources must be designed having motivation in mind to enable effectiveness. ICT has the potential to innovate, enrich, motivate and engage students, as well as strengthening teaching (Davis and Tearle, 1999).

Learning can be improved with ICT and as it advances, it is important for students and instructors to be involved in it. With the learners' participation and motivation towards instructional materials, the teaching and learning process can be effective. Although, there are factors that could obstruct with the advancement and transfer of these instructions and they affect every instructor in one way or the other. These factors could be time, experience or even resources related; for that reason, understanding the integration of technology with students' attitude to facilitate effective instruction is important. According to Bowman (2007), good teaching lies in the design of the system which should guide students by motivating them. Knowing what engages and motivates individual student is essential.

1.1 Statement of the Problem

Several factors like environmental factor (Hanrahan, 1998), social factor (Oyenuga & Lopez, 2012) teaching methods (Penlington, et.al, 2012), motivation (Aiken, 1976) affects learning. Motivation influences what students focus on as well as how successfully they benefit from it (Pintrich & Schunk, 2002; Pugh & Bergin, 2006), and its role is beneficial to learning (Rehman & Haider, 2013). Just as Stedul (2013) stated, motivation has a significant effect on learning because it improves learning strategies used and thinking processes, boosts students energy level and also establishes perseverance attaining certain goals.

When it comes to learning, students can often be seen as active and motivated but sometimes they seem to lack interest. This could be as a result of both internal

and external factors regarding students' attitude towards learning. It is essential to analyze all these factors although, in this study our main concern is based on the instructional materials available to students and since education nowadays is technology driven, it is important to analyze the ICT based instructions.

When instructional materials are misunderstood, learning cannot fully take place. Mueller (1998) said that instructors may think that students are actively engaged with the materials provided, whereas the students may be taking away lessons that are entirely different from the ones that were intended. Instructional materials should be well organized, eye-catchy and just have the right element to be able to keep students' attention and not overwhelm them. It is important for instructors to ask themselves questions regarding the instructional materials they produce for their students. For example, is the context of the design conveying the right information as intended? How satisfying will the students rate the material?

Instructors are responsible for designing and giving out instructional materials to their students and due to the changing learning style, it is critical for instructors to put ICT into their teaching. The latest technology is always more appealing than the last, consequently instructors are bound to face challenges when incorporating ICT into their instructional materials. ICT is influential in transforming teaching techniques although it may not be fully recognized. Dawes (2001) pointed out that complications occur when instructors are required to apply these techniques in challenging situations. These challenges could be time related (Al-alwani, 2005; Becta, 2004), resources related (Pelgrum, 2001; Ertmer, 1999), knowledge related (Bingimlas, 2009; Scrimshaw, 2004) etc. Research has shown that the motivational requirements of students are usually ignored. Ames (1990) mentioned motivation as one of the primary issues in education saying it is usually insufficiently attended to.

In order to fill this void, instructors should be able to incorporate ICT into instructional materials to help motivate students.

With all these said, the main purpose of this study is to determine the motivational effect of ICT based instructional materials on students alongside with the challenges faced by instructors while producing these instructions.

1.2 Research Questions

Motivation plays a fundamental role in learning. However; the motivational needs of students can be easily overlooked, especially when it involves using instructional materials to motivate them. This study will discuss motivation from ICT based instructional materials perspective and in order to reach the aim of the study as mentioned; the following research questions will be looked into and answered:

1. How motivated are students based on their instructional materials?
2. What are the limitations instructors' faces when incorporating ICT into their instructional materials?

1.3 Significance of the Study

This study will contribute to previously conducted researches regarding students' motivation. The use of ICT based instructions is rapidly growing, so expanding the knowledge about challenges instructor face while incorporating ICT in an instruction is important.

With the outcome of this research, the study would be beneficial in the following ways:

i. It can serve as a reference to the curriculum committee and instructors to help improve their instructional materials as a medium for teaching in order to aid students' motivation and to optimize learning.

ii. It can serve to reveal to the faculty about the needed resources that can help enhance the quality of education.

iii. It can create awareness to students about the level of motivation they have for learning so they can know how to improve themselves

1.4 Limitation

i. The research was conducted in the IT department in which the instructors' population is familiar with ICT based instructions.

1.5 Organization of the Thesis

This thesis contains 5 chapters, starting from the introduction to the conclusion. A brief summary of each chapter are given below:

- **Chapter 1** is the introductory chapter that discusses the main overview of the research.
- **Chapter 2** is a review of the literature derived from previously conducted researches; it focuses on the impact of motivation on learning and motivational theories associated with students' learning. It then discusses instructional design from a motivational perspective by including the ARCS (Attention, Relevance, Confidence, Satisfaction) model of motivational design. Finally, the chapter concludes with the barriers faced by instructors when incorporating ICT into their instructional materials.
- **Chapter 3** talks about the methodology in which the research was carried out. It contains information about how, where and with whom the research was conducted.
- **Chapter 4** presents the results of the data collection and discusses these results found and relates them to other research findings.

- **Chapter 5** draws a conclusion to this study and gives recommendations for further researches.

Chapter 2

LITERATURE REVIEW

2.1 Effects of Motivation on Learning

There have been several theories and definitions about motivation that have been described over the years, although these theories and definitions are not so different from one another. Deci (1995) defined motivation as the expectation of the level of success a person expects alongside with the level of appreciation felt after being successful. According to Ryan and Deci (2000),

> Motivation is the drive to accomplish something. Someone without boost or simply no enthusiasm is categorized as unmotivated, in contrast someone with determination or enthusiastic to meet an end is categorized as motivated. (p. 54).

Motivation can also be described as process where goal-driven activities are stimulated and maintained (Schunk, Pintrich, & Meece, 2008). It offers certain directive and inspiring qualities (Brophy, 1983; Wlodkwoski, 1978). Sternberg (2005) also defined motivation from an educational perspective as the level which a student puts effort in order to concentrate on learning so as to attain successful outcomes.

Theorists in the field of educational psychology have considered motivation as a key factor which contributes to learning. Entwistle (2003) said that motivation is among many factors that influences how students approach learning and perceive their learning environment. Sternberg (2005) note that motivation is crucial pertaining academic accomplishments, without motivation, students may not make

an attempt to study. Unmotivated students find it difficult to learn and if students believe they will not succeed, they will not be motivated. Motivated students learn quicker, much efficiently and they need less repetition (Pintrich & Schunk, 1996; Brophy, 1998). They experience higher perceived knowledge and self-efficacy within a given area (Bandura, 1997; Pajares, 1996). Students' motivation differs in levels (how much motivation), and orientations (intrinsic or extrinsic). Research has shown that with different orientations of motivation, the quality of performance can be very different (Bénabou & Tirole, 2003; and Deci & Ryan, 1985).

2.1.1 Intrinsic vs. Extrinsic Motivation

Motivation can be an internal or external drive also known as intrinsic motivation and extrinsic motivation respectively. Intrinsic motivation starts from within a person and it leads to the enjoyment of the process and also the satisfaction of increasing one's competency, while extrinsic motivation is focused on attaining or avoiding something outside oneself (Deci & Ryan, 2000). Intrinsically motivated students are moved because they want to learn, execute and also for the feeling associated with accomplishment, whereas extrinsically motivated student are motivated for grades or other forms of outside incentive like cash or even honors (Gottfried, 1985).

In the classroom, genuine interest in the topic, student acknowledging the relevance of the topic, excitement of classroom and eagerness can be seen as intrinsic motivation while getting good grades, the urge to do better than classmates can be seen as extrinsic motivation. Various studies indicates that intrinsically motivated students are more inclined to exhibit much more ingenuity (Moneta & Siu, 2002), have better school performance (Gottfried, 1985; Goldberg & Cornell, 1998; Deci & Ryan, 1985 and Mitchell, 1992), persist while encountering any academic difficulty

(Boyd, 2002), and also volunteer willingly for exercises (Johnson, Beebe, Mortimer, & Snyder, 1998).

The type of motivation can be autonomous or controlled, where autonomous is the feeling of having an option with a choice, while controlled is the feeling of being pressured. According to Deci and Ryan (1985), intrinsic and a well-internalized form of extrinsic motivation is considered autonomous while poorly-internalized form of extrinsic motivation is considered controlled.

Over the years, there has been a gradual decrease in intrinsic motivation towards education, sometimes you may hear students say they just want to get good grades and nothing more. In the research carried out by Van-Etten, et.al, (1998) all the students disclosed that the main interest in courses was obtaining a decent score. Extrinsic motivation can focus student attention on tangible payoffs and not learning itself (Kruglanski, 1978) which does not necessarily aid learning but rather when these payoffs are no longer available the willingness to continue learning may likely fade (Condry & Chambers, 1978). Although, Ryan & Deci (2000) reported that it is necessary for instructors to understand extrinsic motivation and how it works, because relying on intrinsic motivation to promote learning is not enough. Ryan & Deci (2000) gave an example about classroom activities may not be necessarily be interesting or enjoyable to the students so by using a more effective methods of extrinsic motivation for instance electronic media resources, which can be seen as an active strategies for successful teaching, will in turn have a positive effect on learning.

2.1.2 Motivational Theories

There are theories associated with motivation which includes self-efficacy theory (Bandura, 1977a), attribution theory (Weiner, 1985) and achievement goal theory (Ames, 1992; Dweck, 1986).

2.1.2.1 Self-efficacy Theory

Self-efficacy according to Bandura (1993), is one's belief to handle a task, it is correlated with motivation, cognitive processing, self-worth and choice of activities. It is a personal evaluation on one's own competence to accomplish in a particular task and not similar tasks (Schunk, Printrich & Meece 2008). Self-efficacy has confirm and powerful influence on motivation, self-regulation and achievement (Bandura, 1977a; Pajares, 1997; Multon, Brown & Lent, 1991). It affects our pattern of thought, measures our level of motivation, and guides our choices when making decisions (Bandura, 1977a).

Self-efficacy has an effect on students' interest, choice of activities and persistence (Pajares, 1997). Schunk (1989) describes self-efficacy as how students at the beginning of an activity differ in thoughts about their ability to acquire knowledge, master skills etc., but with experiences, teachers' feedback and other factors combined motivation increases. When students observe that their learning is improving and they continue to work on more activities, they cultivate a feel of self-efficacy for better performance. Efficacious students perceive themselves as capable and are self-regulating (Seifert, 2004) while inefficacious students may avoid task that seem difficult (Bandura, 1993). Studies conducted prove that students' improvement in self-efficacy brings about increase to the use of cognitive and meta-cognitive approach which in turn results to greater academic accomplishment.

In order to enhance students' self-efficacy, Schunk and Parjares (2002), suggest that instructors can set specific and attainable, short term learning goals, and these goals should be seen as challenging but within the student's perceived abilities. Schunk and Parjares (2002) also noted that regular feedback about student progress helps strengthen self-efficacy and sustain motivation. Instructors should be clear about the objectives of a lesson in order to increase student confident and enhance self-efficacy (Schunk, 1982; Ames, 1994). By having an idea about how efficacious students are helps the instructor to know how to deliver instructional materials.

2.1.2.2 Attribution Theory

Attribution is an explanation of an outcome which may include skills, effort, or strategy. Attribution theory assumes that people always seek to find the cause or explanation of an achievement outcome (Clinkenbeard, 2012; Weiner, 1985; Kelley & Michela, 1980). It has been used over time to examine motivation, both social and academic among individuals (Graham, 1997).

Attribution theory (Weiner, 1985) has three factors that people use to explain an outcome which are internal or external, stable or unstable, controllable or uncontrollable. It assumes that people sometimes attribute success or failure to things that makes them feel better. For example, when students pass an exam they tend to attribute it to their effort while in case of failure they tend to attribute it to difficult instructional material or blame the instructor. Clinkenbeard (2012) also noted that attribution set by student on a given task affects how they approach similar tasks in the future.

Attribution affects the expectation of future success, students usually attribute their success or failure to factors such as luck, ability, effort, task difficulty (Weiner,

1979) and these factors can help determine how motivated a student will be in the next task.

2.1.2.3 Achievement goal Theory

Achievement goal theory is the purpose for engaging in a task (Maehr, 1989). It proposes that student motivation is an attempt to achieve certain goals (Pintrich & Garcia, 1991). Achievement goal theorists describe two kinds of goals which are performance goal and learning goals (Dweck, 1986), ego involvement and task involvement (Nicholls, 1984), performance goal and mastery goal (Ames & Archer, 1987). Goal theory according to Meece, Blumenfeld, & Hoyle (1988) is the behavioral intentions of how students are determined to approach and take part in educational activities. As described by Woolfolk-Hoy & Hoy (2006) it is a set of beliefs students have that clarifies why the goal is vital to them.

2.2 Instructional Design and Motivation

Instruction does not always stir up students' motivation to learn even when prepared following an instructional design model or principles. No matter how excellent these instructional materials are, students may not be committed to them unless they are motivated to do so. Instructional design is a strategic tool used to identify the desire for understanding, skill, along with other performance associated qualities (Kealy, Bakriwala, & Sheridan, 2003; Snellbecker, 1974). One performance associated quality that influences the success of any instruction is motivation (Keller, 1987; Hardré, 2001).

The future of educational technology is calling for the renewal traditional instructional models on how to motivate students and more especially how to keep the students motivated. Over time, the main focus has been on how to improve instructions through the way materials and processes are designed and developed but

little to no attention has been given on how to improve the motivational needs of student. This is a serious concern (Keller, 1979; Reigeluth, 1979) that should be addressed (Martin and Driseoll, 1984). Instructional design has mostly been concerned about the factors associated with learning effectiveness however the factors that trigger the willingness to learn are usually left aside.

Well-designed instructions can lead to better performance which contributes to the improvement of motivation. Well-designed instructions can prevent students from becoming demotivated by not involving tasks that might be seen as pointless. Instructional design procedure should help strengthen the relevance of instruction. According to Keller (1999), instructional design must tackle critical issues that affect learning including motivation in order to effectively promote and support learning.

Giving attention to motivation during the design of instructions is beneficial, when materials are designed to motivate learners, it facilities effective transfer and retention (Druckman & Bjork, 1994). Unproductive (dull, complicated) lessons could diminish the degree of motivation of motivated learners (Keller & Litchfield, 2002). Keller & Litchfield (2002) also said that in order to attend to the motivational needs of students, instructional designers ought to grasp the complication connected with human motivations to some extent, at least regarding layout issues and implications.

2.2.1 Keller ARCS Model of Motivational Design

ARCS model of motivational design it is a systematic way of finding and solving learning motivation problems. It was developed to effectively find major influences that motivated learning. The ARCS Model (Keller, 1984) is a means of increasing students' motivation by using instructional materials and it contains three main features:

i. The ARCS model contains four conceptual components that (Attention, Relevance, Confidence, Satisfaction) categorize human motivation.
ii. It contains strategies for the improvement of the overall motivational demand of an instruction.
iii. It adds a thorough design method which is used productively with other instructional design models (Keller, 1984).

The purpose of this model as stated by Keller (1984) is to recognize methods which make instructions more engaging. The ARCS model is made up of four components namely: Attention, Relevance, Confidence and Satisfaction, There are strategies that help incorporates these components of the ARCS model into an instruction. These four components have to be met in order to be motivated and sustain that motivation

- **Attention:** Attention is a prerequisite for learning and also an element of motivation. Here the main issue is not about getting students attention but how to sustain it. Responding to the knowledge-seeking curiosity of students goes a long way (Berlyne, 1965). The goal here is to balance boredom versus hyperactivity or indifference versus anxiety. Table 1 shows the strategies to use in order to gain and maintain students' attention.

Table 1: Attention Strategies Plan (Keller & Suzuki, 1988)

Strategies	Explanation	Process Question
Perceptual Arousal	Use specific language and familiar concepts that are relatable to the learner.	What can I do to capture the learner's interest?

Inquiry Arousal	Stir up the learners' curiosity by using methods like having them come up with questions, or giving them a practical problem to solve.	How can I trigger an approach of curiosity?
Variability	Maintain student interest by having various methods of delivering instructions	How can I maintain the learners' focus?

- **Relevance:** Relevance is the importance students see in learning a material, it can come from the material content or even the way it is taught. Students should view instructional materials as a way to achieve their goals (Keller & Suzuki, 2004). Table 2 shows the strategies to use to show students the significance of the instructional material.

Table 2: Relevance Strategies Plan (Keller & Suzuki, 1988)

Strategies	**Explanation**	**Process Question**
Familiarity	Use specific language and familiar concepts that are relatable to the learner.	How can I link the instructions to learner's prior knowledge?
Goal Orientation	Define goals and objectives of the instruction by presenting goals for accomplishment also having the learner define their own goals too.	How do I best meet my students' needs?
Motive Watching	Use the best teaching techniques that help reach the goals of both the instruction and the students effectively.	How and when can I present my students with the right options, tool and responsibilities etc.?

- **Confidence:** Confidence can be achieved by students attributing an outcome to skills and their hard work but not to luck or the task difficulty level (Weiner, 1974). This component includes element of self-efficacy theory (Bandura, 1977b) and attribution theory (Weiner, 1974). Table 3 shows the strategies to use in order to boost students confidence.

Table 3: Confidence Strategies Plan (Keller & Suzuki, 1988)

Strategies	Explanation	Process Question
Learning Requirements	Give students an idea of the likelihood associated with accomplishment by introducing efficiency specifications and evaluation conditions.	How can I help to build an encouraging approach for success?
Success Opportunities	Prepare challenge levels that permits success experiences in both learning and performance situations.	How will the learning experience contribute to the students' views in their competence?
Personal Control	Give responses and other strategies that help assist personal acknowledgments for success.	How well do the students recognize that their success depends on their attempts and along with skills?

- **Satisfaction:** Satisfaction involves students feeling happy about their accomplishment. Intrinsic and extrinsic motivation should be satisfied. It is essential for students to feel a sense of equality or justness (Adams, 1965). Table 4 shows the strategies to use in order to increase students satisfaction.

Table 4: Satisfaction Strategies Plan (Keller & Suzuki, 1988)

Strategies	Explanation	Process Question
Natural consequences	Prepare instances to use newly attained information or ability in a real or stimulated situation.	How do I make chances for students to use in their recently attained knowledge/skills?
Positive consequences	Make suggestions and reinforcements available that will support the desired behavior	What will provide reinforcements on the students' successes?
Equity	Maintain stable criteria and penalties for task accomplishment.	How can I assist the students in securing an encouraging feeling about their accomplishments?

2.2.1.1 Using the ARCS model

The ARCS model can be merged within other instructional design model because it is just a means of meeting the motivational needs of students. When the ARCS model terms are reached, the learners are possibly more motivated and just in the current instruction but also maintaining the motivation to learn. According to Visser & keller (1990), ARCS model attends to the motivational needs of the learner during a specific lesson and due to its flexibility long term motivational goals can be defined.

Integrating ARCS model into an instructional design model is a systematic process that contains four steps: define, design, develop and evaluate

- **Define:** The define phase involves three steps; classify problem, analyze the audience and define motivational objectives. The needs of the students might be different, some students may have low confidence, and others might lack perceived relevance. In other words there are motivational challenges in various circumstances therefore it is important to find the problem of the class, analyze the students behavior to see which ones are intrinsically and those that are extrinsically motivated and finally set motivational objectives according on the requirements of the students.
- **Design:** The design phase has two steps; create potential strategies and select the ones to use. It is important to brainstorm in order to have a variety of potential strategies and critically review all these strategies to choose the best one that will produce the optimal result. The motivational strategy used should not derail from the instructional objectives, it should not take up too much time from the instruction, and also compatible with how the instruction is delivered. Motivational strategies ought to stir up the zeal to learn and not derail learners from the process (Brophy, 1983).
- **Develop:** The develop phase has two steps; create any extra material needed and integrate it to the instructional material. This can cause to revise the instructional material for consistency and continuity.
- **Evaluate:** Evaluation should be centered on motivational and learning outcomes. To evaluate motivational outcome, the use of direct measures like intensity of effort, attitude, persistence, emotion are important.

2.3 Challenges Integrating ICT into Instruction

Enhancing the quality of teaching and learning has constantly been of topmost importance in education. Education has faced social, technical, cultural challenges

overtime and according to Januszewski & Molenda (2008), educational technology tries to overcome these challenges in order to facilitate learning and improve performance. ICT is playing a prominent part in education today and prior researches have shown the effectiveness of ICT in knowledge distribution (Lin & Wang, 2008), blended-learning (Huang, Lin & Chiang, 2010), collaborative task (Chang, Lan, Chang, & Sung, 2010), and also in helping improve self-efficacy (Henderson, Huang, & Grant, 2012).

With ICT tools, instructors can successfully comply with the various requirements of students and additionally advance their learning skills (Samuel & Bakar, 2006). With the use of ICT according to Song & Keller (2001) appropriate motivational strategy can be added when students are demotivated and unnecessary ones removed when students are highly motivated. Incorporating ICT through different types of media facilitates in motivating students also by increasing communication and collaboration among peers because it accommodates diverse learning styles. As Relan (1992) stated that factors such as color, animation and graphics have a lasting effect can be instructionally and motivationally powerful.

As teachers integrate ICT into instructions, they are bound to face challenges or barriers in the process. Bromme, Hesse, and Spada (2005) defined these challenges as a gap between the beginning and end that has to be overcome to achieve the desired goal. According to Goktas, Yildirim and Yildirim, (2009), working with ICTs can be considered difficult because they are new, and routines have to be established while using them. Goktas, Yildirim and Yildirim, (2009), also noted that adopting ICTs is complex because it has to do with the use of different tools or means to cope with previous issues but additionally the confidence that these technologies can facilitate in meeting new demands.

To successfully integrate ICT into education to work effectively, the barriers or challenges needs to be found and tackled. Hayes (2007) said that, to successful incorporate ICT requires commitment and repeated experimentation within different periods of time. According to (Ertmer et.al., 1999) when searching for explanations why instructors are battling to work with ICTs properly, it is essential to check into what they have (beliefs as well as practices) and also what they do not possess (equipment). Tyack and Cuban (1995) also said that, instructors rely on resources, practical methods and joint support to bring about change. These challenges faced may include but not restricted to lack of resources such as outdated or limited computers in the classroom (Means, Penuel, and Padilla, 2001), not enough time due to the trouble of preparing an ICT-mediated lesson (Mukama & Andersson, 2008), insufficient training, lack of institutional and financial support (Neyland, 2011; Khine, & Lim, 2006; Mumtaz, 2000), insufficient technical support and equipment (Groves & Zemel, 2000; Butler & Sellbom, 2002; Means, et al., 2001), instructors' views about teaching and learning, concerning technology incorporation. A teacher's belief on the usage of ICT to improve classroom practice will determine the effectiveness of incorporating ICT (Roblyer, 1993; Schibeci et al., 2008).

Based on previously conducted studies some instructors revealed that their technical skills were insufficient which makes them feel insecure about incorporating ICT which might decrease their professional performance. Lack of motivation (Lofstrom & Nevgi, 2008) is another challenge in incorporating ICT into instructional materials. Ertmer (1999) described two types of barriers which are associated with ICT integration; first order and second order barriers. First order barriers are outside barriers to the instructors' for instance inadequate resources, training, and support therefore, they can be easily solved Ertmer (1999). On the other

hand, second order barriers are internal to the instructor's belief for instance teaching methods; evaluation style makes it more difficult to tackle Ertmer (1999). Berry, Loughran, Smith, & Lindsay, (2009) agreed that instructors' knowledge of practice alongside their beliefs are difficult to deal with. Becker (2000) also concluded in his research that there is an obvious connection between teaching beliefs and the instructors' application of ICT in their style of instruction. The inadequacy of incorporating ICT as envisioned, the pressure of academic timetables and department organizations, teachers' unwillingness to use ICT because of their belief of teaching better and quicker through a conventional teacher-centered instructions are all major barriers incorporating ICT into education (Khine, & Lim, 2006; Donnelly, McGarr, & O'Reilly, 2011).

In the study administered by Zhao, Pugh, Sheldon, and Byers (2002), 11 major factors were identified that caused challenges in the incorporation of ICT into instruction. These factors were subdivided into three categories which involve the teacher, the innovation and the context. Zhao, et al. (2002), continued that the factors in the teachers' category have three aspects that deal with teachers impacting ICT in the classroom and they include: technology proficiency, pedagogical compatibility and social awareness. Technology proficiency refers to how much is known about the technology, pedagogical compatibility refers to how fitting the instructors pedagogical beliefs is with the technology used and social awareness is the implication of a teacher's capability to consult with the social angle of the school principles. Zhao, et al. (2002) also discussed the factors in the innovation category revolve around distance and dependence. Distance factor includes the gap from the current school culture, current practice and also the gap from available ICT resources while dependence deals with how changes relies on other people or resources.

Finally Zhao, et al. (2002) reported the factors in the context category, has three aspects that essential for innovation. These are human infrastructure, technological infrastructure and social support. Human infrastructure is the organizational preparation to guide incorporating ICT in the classroom, technological infrastructure is what is currently available to cater for the innovation and social support to which extent do colleagues back or discourage the innovators.

To help overcome these challenges, requirements like hardware, software, access to internet resources, technical support, and self-efficacy are needed (Goktas, Yildirim and Yildirim, 2009). In order to use ICT effectively in education; the instructors must be motivated to cultivate technical and communicative competencies (Lin, Huang, & Chen, 2014), the instructors must understand that using ICT could stimulate and motivate students to learn, and instructors should also share the challenges faced in ICT-mediated lessons with their colleagues (Khine, & Lim, 2006).

Chapter 3

METHODOLOGY

3.1 Research Design

The study was designed as a case study in mixed-method approach that focused on the IT department. Case study design is used in many situations to increase knowledge about a phenomenon (Yin, 2009). They are designed to get the detailed information from the viewpoint of the respondents (Tellis, 1997). Applying mixed-method approach is a means of gathering, examining and combining quantitative and qualitative approach within a study in order to comprehend a research problem (Johnson & Onwuegbuzie, 2004). Using both quantitative and qualitative data offers a greater understanding and answer of the research problem at hand by merging the strengths of both approaches (Connelly, 2009).

In order to reach the first research question "how motivated are students based on their instructional materials? ", a quantitative approach was used. Merriam (1998) said using quantitative approach gives prediction, control, and confirmation of a given data set. Quantitative data gives measurable proof to aid in determining a cause and its impact generate adequate data collection techniques, create generalization to a population, help in comparing groups (Creswell, et.al, 2011). This approach was used to get a rich and comprehensive descriptive data.

To reach the second question, "what are the limitations instructors' faces in incorporating ICT into their instructional materials?", a qualitative approach was used. This approach helps provide rich descriptions by enhancing the understanding

of the context and the event as well (Sofaer, 1999). It is an organized and thorough type of questioning and qualitative data aid researchers fully grasp procedures, give comprehensive details about situations also, points out the comments of the respondents via quotes (Creswell et al 2011). Qualitative approach was necessary in this study to get the detail information from the instructors.

Mixed methods best suits problems whereby a single approach is insufficient to produce several viewpoints to help completely understand a research problem (Johnson & Onwuegbuzie, 2004; Creswell, 2012). The benefits of both approaches were useful for this research and by combining them make it possible to make generalization on the targeted population and get a richer data.

3.2 Participants

The target population involved both the students and instructors of the IT department of Eastern Mediterranean University from the 2013-2014 spring semester. Participant from the IT department were used because it is a technology driven department, hence they use ICT in almost every area of the teaching and learning process.

The research took place with a sample size of 187 subjects. It included 15 instructors and 172 students in the IT department who took part in the study voluntarily. The instructors participated in the qualitative part of this study and they all taught at least one main course with some elective courses too. These instructors have been teaching in the IT department between 25-10 years. Among the 172 students who took part in the quantitative part of this study included 42 female students and 130 male students. 18 were first year students, 56 were second year students, 46 were third year students, 38 were fourth year students and 14 were master students. Table 5, gives a breakdown of the respondents in this research

study. All participants were from the department of information technology, Eastern Mediterranean University.

Table 5: Overview of Participants

Quantitative Approach Participants			
Students	Gender	Male	130
		Female	42
	Year	First	18
		Second	56
		Third	46
		Fourth	38
		Master	14
Qualitative Approach Participants			
Instructors	Gender	Male	8
		Female	7

3.3 Data Collection Instrument

Questionnaire

A closed-ended Questionnaire (Appendix D) was used as a means of gathering data from the student respondents. Questionnaires are very brief, already planned list of questions meant to produce certain data to meet up the needed information about a related topic (Key, 1997). The Questionnaire had an informed consent letter introducing the study, its purpose and anonymity of the participant. The questions asked were divided into two sections; section A was about the students' demography data and it contained 2 questions with responses where students picked the right response relating to them. Section B contained 36 questions using a 5 point Likert scale ranging from not true (1), slightly true (2), moderately

true (3), mostly true (4), to very true (5). The questions were retrieved from the Instructional Materials Motivation Survey (IMMS) produced by Keller (1993) and it is centered on the ARCS model (Keller, 1984). The questionnaire measures attention, relevance, confidence and satisfaction. 10 of the questions were in reverse order so as to increase the strength of the questionnaire. Table 6 shows the question number that measures which element, the number in reverse order means the scoring of that question is in reverse order, where 1 is scored as 5, 2 as 4, 3 remains 3, 4 as 2 and 5 as 1.

Table 6: IMMS Question Guide

Element	Question number
Attention	2, 8, 11, 12 (reverse), 15 (reverse), 17, 20, 22 (reverse), 24, 28, 29 (reverse), 31 (reverse)
Relevance	6, 9, 10, 16, 18, 23, 26 (reverse), 30, 33
Confidence	1, 3 (reverse), 4, 7 (reverse), 13, 19 (reverse), 25, 34 (reverse), 35
Satisfaction	5, 14, 21, 27, 32, 36

Interview

A face-to-face interview (Appendix E) was used as a means to collect data from the instructors. Interview is used to discover the opinion, experiences, values and reasons of people on certain issues and they most suitable where detailed information are needed from the participants (Gill, Stewart, Treasure, & Chadwick, 2008). The interview involved 9 questions and 5 of these questions had prompts that needed further explanations. The interview contained questions mainly associated with: the areas instructor use ICT for teaching, how they design instructions to

motivate students, the limitations the instructors face when using ICT in their instructional materials, how the instructors decide on effective instructional methods. The interview was made to get detailed response and thorough explanation from the instructors in order not to be confined to short or restricted answers.

3.4 Data Collection Procedure

The data instruments were prepared and a letter of permission (see Appendix A) to conduct the research was sent to the director of the department. Approval was gotten for the go ahead to collect data and also informed consent from all participants (Appendix B & Appendix C) was requested. The purpose and significance of the study was made aware to the participants through the informed consent letter.

For the interview sessions, the instructors were approached and some did the interview immediately while others gave a specific time for the interview due to their schedules. The interview sessions took place in the instructors' offices and it lasted for about 20-30 minutes depending on the response received. It took place with one instructor at a time which gave a chance to collect each instructor's individual response. Some instructors gave short answers while some elaborated and gave detailed answers to the question asked. The interview sessions with each instructor was recorded in order not to forget anything the instructor said and also for the interview to be transcribed later. A few notes were also written down as the interview was going on.

As for the questionnaire distribution, students were approached during break periods and also in the classroom. The questionnaire was distributed to them in order to fill accordingly. It was informed that if a student had already filled the questionnaire before there was no need to fill it again. The students took about 10-15 minutes to completely fill in the questionnaire, which they personally returned to the

researcher. The instructors aware of the research going on made it possible for data to be collected from the students in some of their class periods especially in tutorial sessions conducted by the course assistants.

3.5 Data Analysis

Data collected were put into the SPSS software and analyzed using the IMMS scoring manual (Appendix F) developed by Keller (1993) on how to score the data. The questions were separated into the Attention, Relevance, Confidence and Satisfaction elements of the ARCS model and each element was analyze separately to get its statistical data. The percentage of each questions were gotten, the descriptive data in terms of mean and standard deviation was derived for each element and also the Cronbach's alpha of each element along with the total questionnaire was gotten.

The interview sessions were transcribed and coding process done on it and also categorized. The notes that were taken during the interview were used when analyzing this data. The interview data were transcribed daily after each interview day to ensure it was well analyzed and not to forget anything when finding patterns. By combining all the response gotten from each instructor and analyzed, data for each question were gotten.

3.6 Validity and Reliability

The IMMS questionnaire has been used by many researchers since it was developed to measure students' motivation towards the instructional materials provided for them. Keller (1993) developed an IMMS scoring manual (Appendix F) and based on the Cronbach's alpha measures the reliability of the questionnaire as shown in Table 7:

Table 7: IMMS Reliability Estimate (Keller, 1993)

Scale	Reliability Estimate (Cronbach α)
Attention	.89
Relevance	.81
Confidence	.90
Satisfaction	.92
Total scale	.96

The Cronbach's alpha of this study is shown in Table 8:

Table 8: Reliability Estimate for This Study

Scale	Cronbach's Alpha
Attention	.744
Relevance	.669
Confidence	.665
Satisfaction	.765
Total	.884

Expert opinion was gotten and crosschecking was done for both data collection instruments used, in order to make sure they are appropriate for use and it measured what it was intended to do. The notes taken during the interview contributed to the reliability of the data. Some questions in the interview were used as a means to reflect on the questionnaires given to the students.

Chapter 4

RESULTS

4.1 Demography

The demographic information from the questionnaire is included in Table 9 below which are represented a frequency table in terms of percentage:

Table 9: Questionnaire Demographic Information

Question	Response	Frequency	Percent
Gender	Male	130	75.6
	Female	42	24.4
What year are you?	First	18	10.5
	Second	56	32.6
	Third	46	26.7
	Fourth	38	22.1
	Master	14	8.1

From Table 9 above it can be seen as that about 75 % of the response gotten where from male students. Also a large part of this response comes from the second and third year students with 32.6 % and 26.7% respectively. The first year and master students are not largely represented. The demographic information has no correlation with any variable in this study.

4.2 Research Question 1

How motivated are students based on their instructional materials

The data set which included several variations of responses was compiled to evaluate the results. The data was separated into each element of the ARCS model so as to focus on each of them individually. Descriptive statistics (mean, standard deviation) of each element and the total of each questionnaire can be seen in Table 10.

Table 10: Descriptive Statistics of Each ARCS Element

Attention	Mean	3.2539
	Std. deviation	.61781
	N	172
Relevance	Mean	3.4767
	Std. deviation	.56934
	N	172
Confidence	Mean	3.4819
	Std. deviation	.60032
	N	172
Satisfaction	Mean	3.7035
	Std. deviation	.77519
	N	172
Total	Mean	3.4415
	Std. deviation	.51259
	N	172

Table 10 put students' motivation level from instructional materials on the average. Based on the total mean=3.4415, it shows that students' motivation is on a moderate level and can lean toward improvement. In respect to ICT based instructional materials, from this table it is revealed that attention element with

mean=3.2539 has the lowest result and satisfaction element with mean=3.7035 has the highest result, confidence and relevance elements are almost at the same level with 3.4819 and 3.4767 respectively. By looking at the table in order of highest to lowest mean it can be said that students find; the completion of instructional materials satisfying, students are confident after completing a material, they find the material contents relevant to them and lastly the presentation of the materials keep their attention.

Each ARCS component is separated and represented in frequency Tables 10-13 that are represented in percentages so has to give a larger view of the responses gotten from the students. In the tables below, 1 denotes Not True, 2 denote Slightly True, 3 denote Moderately True, 4 denote Mostly True and 5 denotes Very True.

Attention Element

Table 11: Frequency Table of the Attention Element

Attention Items	**1**	**2**	**3**	**4**	**5**
There was something interesting at the beginning of the lecture materials that got my attention.	*10.5*	*7.0*	*33.7*	*23.3*	*25.6*
The lecture materials are eye-catching	*14.0*	*18.6*	*36.0*	*22.1*	*9.3*
The quality of the writing and fonts helped to hold my attention.	*8.1*	*11.6*	*23.3*	*36.0*	*20.9*
The lecture materials are so abstract that it is hard to keep my attention on it.	*12.8*	*14.0*	*40.7*	*17.4*	*15.1*
The lecture materials look dry and unappealing.	*12.8*	*17.4*	*26.7*	*17.4*	*25.6*
The way the information is arranged on the material helped keep my attention.	*7.0*	*11.6*	*27.9*	*39.5*	*14.0*
The lectures have things that stimulate my curiosity.	*7.0*	*15.1*	*30.2*	*36.0*	*11.6*

The amount of repetition in the lecture materials causes me to get bored sometimes.	*16.3*	*24.4*	*24.4*	*17.4*	*17.4*
I learned some things that were surprising or unexpected.	*3.5*	*8.1*	*27.9*	*38.4*	*22.1*
The variety of reading passages, exercises, illustrations, etc., helped keep my attention on the lesson.	*3.5*	*9.3*	*27.9*	*41.9*	*17.4*
The style of writing is boring.	*18.6*	*18.6*	*24.4*	*19.8*	*18.6*
There are so many words on each page that it is irritating.	*18.6*	*26.7*	*23.3*	*15.1*	*16.3*

In order to grasp student attention, the materials has to be eye-catchy and from statement 2 (The lecture materials are eye-catching) on the above table only 9.3% of the students agree that their instructional materials are eye-catchy, 12.8% strongly disagree with statement 5 (the lecture materials look dry and unappealing), with 26.7% of the student moderate about this statement and 25.6% strongly feel that their lecture materials are dry and unappealing. 39.5 % of the students answered mostly true to the statement 6 (The way the information is arranged on the material helped keep my attention). The attention elements have low percentage distributions with the figures closely related.

Relevance Element

Table 12: Frequency Table of the Relevance Element

Relevance Items	**1**	**2**	**3**	**4**	**5**
It is clear to me how the content of lesson material is related to things I already know.	*4.7*	*9.3*	*29.1*	*43.0*	*14.0*
There were stories, pictures, or examples that showed me how these materials could be	*10.5*	*16.3*	*22.1*	*39.5*	*11.6*

important to some people.					
Completing lessons successfully is important to me.	*3.5*	*3.5*	*15.1*	*20.9*	*57.0*
The contents of the materials are relevant to my interests.	*7.0*	*9.3*	*29.1*	*45.3*	*9.3*
There are explanations or examples of how people apply the knowledge in these lessons.	*5.8*	*23.3*	*33.7*	*25.6*	*11.6*
The content and style of writing in the material convey the impression that its content is worth knowing.	*7.0*	*19.8*	*34.9*	*29.1*	*9.3*
The lessons are not relevant to my needs because I already know most of it.	*10.5*	*16.3*	*26.7*	*22.1*	*24.4*
I could relate the content of the materials to things I have seen, done, or thought about in my own life.	*5.8*	*16.3*	*39.5*	*24.4*	*14.0*
The contents of the materials would be useful to me.	*2.3*	*3.5*	*20.9*	*38.4*	*34.9*

The way the student view the relevance of instruction materials is important because if they feel it is irrelevant, they would not like to spend time on it. from statement 1 (It is clear to me how the content of lesson material is related to things I already know) the highest percentage is 43 % which is mostly true, only a few percentage of the students feel negatively about this statement, with 4.7% not true an 9.3% on slightly true. From statement 4 (Completing lessons successfully is important to me), a huge 57% feel it is very important for them to complete the lessons successfully.

Confidence Element

Table 13: Frequency Table of the Confidence Element

Confidence Items	**1**	**2**	**3**	**4**	**5**
When i first look at the lecture materials, i had the impression that it would be easy for me	*8.1*	*12.8*	*22.1*	*32.6*	*24.4*
The material was more difficult to understand than I would like for it to be.	*14.0*	*18.6*	*25.6*	*20.9*	*20.9*
After reading the introductory information, I felt confident that I knew what I was supposed to learn from the lesson.	*5.8*	*10.5*	*26.7*	*34.9*	*22.1*
Many of the pages had so much information that it was hard to pick out and remember the important points.	*12.8*	*29.1*	*30.2*	*17.4*	*10.5*
As I worked on my lecture materials, I was confident that I could learn the content.	*1.2*	*9.3*	*18.6*	*46.5*	*24.4*
The exercises in the lesson are too difficult.	*7.0*	*19.8*	*24.4*	*24.4*	*24.4*
After working on the materials for a while, I was confident that I would be able to pass a test on it.	*3.5*	*3.5*	*17.4*	*36.0*	*39.5*
I cannot really understand quite a bit of the material in my courses.	*8.1*	*18.6*	*32.6*	*17.4*	*23.3*
The good organization of the content helped me be confident that I would learn the material.	*3.5*	*4.7*	*34.9*	*34.9*	*22.1*

From statement 5 (After reading the introductory information, I felt confident that I knew what I was supposed to learn from the lesson) 18.6% answered moderately true, 46.5% answered mostly true and 24.4% answered mostly true. From statement 7 (After working on the materials for a while, I was confident that I would

be able to pass a test on it), there is a positive feedback gotten with just 3.5% of the student with 1 on the scale and also 3.5% with a 2 on the scale. From statement 9 (The good organization of the content helped me be confident that I would learn the material) there is a positive feedback gotten with just 3.5% of the student with 1 on the scale and also 4.7% with a 2 on the scale. With these it can be said the confidence of the instructional material is at a good place.

Satisfaction Element

Table 14: Frequency Table of the Satisfaction Element

Satisfaction Items	**1**	**2**	**3**	**4**	**5**
Completing the exercises given in a lesson gave me a satisfying feeling of accomplishment.	*1.2*	*5.8*	*22.1*	*38.4*	*32.6*
I enjoy the lessons so much that I would like to know more about the related topics.	*10.5*	*14.0*	*19.8*	*36.0*	*19.8*
I really enjoy studying my lecture materials.	*12.8*	*10.5*	*25.6*	*31.4*	*19.8*
The wording of feedback after exercises helped me feel rewarded for my effort.	*10.5*	*9.3*	*29.1*	*27.9*	*23.3*
It felt good to successfully complete a lesson.	*3.5*	*4.7*	*17.4*	*29.1*	*45.3*
It is a pleasure to work on such a well-designed material.	*3.5*	*4.7*	*19.8*	*33.7*	*38.4*

Satisfaction is important for the students, from statement 5 (It felt good to successfully complete a lesson.) the highest percentage is 45.3 % very true. Majority of the students are satisfied after the completion of a less only a few percentage of the students feel negatively about this statement, with 3.5% not true and 4.7% on slightly true. From the table above, completing a lesson gives a sense of

accomplishment and also a good design adds to the satisfaction derived from instructional materials.

Additionally, questions about student motivation were asked to the instructors to get their own perspectives of the level of students' motivation based on their instructional materials and all instructors responded that the motivation of students is decreasing. It is becoming harder to motivate students, especially because the student wait for the last minute or just study during exams. Instructor (6) commented that "now students only want to get good marks, they don't really think about knowing the topic, their just want to only pass." Another instructor (7) compared students from 10 year ago to the students now saying "Students were more interested in the topics, the departments, they wanted to do projects, homework but now it has changed a lot. Nowadays they just want to get help all the time, they never want to do project, homework, even now I am not grading the homework, I just give them for practice but the never come for feedback"

Based on the findings, the motivation of students on their instructional material is slightly above average, students are not so motivated because they feel their instructional materials are abstract which does not attract their attention. The contents of the materials are relevant to them but the still have a hard time knowing how people apply this knowledge. Completing a chapter successfully gives a sense of confidence and satisfaction. Although instructors feel students do not focus on their instructional materials until it is necessary for them. Regarding the instructional materials, students are more extrinsically motivated, because their main aim is to get good grades.

4.3 Research Question 2

What are the limitations instructors' faces when incorporating ICT into their instructional materials?

In order to respond to the second research question, the face to face interview session that was carried out was centered on some main questions organized to better understand the phenomenon and the results are as follows:

i. Areas of using ICT:

All instructors use ICT during lectures and due to the type and attributes of some courses it is impossible to teach them without ICT (e.g. an animation course). All courses have a webpage which is regularly updated and serves as a means to keep all the students up-to-date with needed materials. The IT department is familiar with using ICT and according to the instructors the area they use ICT are as follows:

- Lecture: The basics used by teacher in the lecture are computers, overhead projector, PowerPoint slides and in these slides the teachers uses animations and/or videos where necessary. Lab sessions also include the related software. When asked about where the ICT is used, one instructor (4) stated

  > "Of course I use ICT in my lectures; there are computers, PowerPoint slides but I try to make them more attractive with animations, demonstrations."

  Another instructor (1) also said

  > "The related topics I teach have to do with projections, computers, software. I upload lecture notes, previous exam questions, some tools, video, that will be more useful to the students are on the website so that they can easily reach it along with any form of supporting materials"

- Lab exams: ICT is also being used during lab exams because the exams are based on the usage of the related software and not on print paper. Those who

are taking online courses use Moodle, and online quizzes are done with the date formerly announced.

- Project/assignments: Mostly in practical courses, the teachers give projects/assignment that requires the use of ICT and they are submitted in a CD/DVD. One instructor (5) said

> "I use projectors, computers, softwares, for example I opened a new course and I tried to include many softwares are possible so that students can get familiar with these programs. I try to balance, 50% practical 50% theory. ICT is included in my assignments; therefore the students are forced to install those softwares to complete their work."

ii. Objectives of using ICT:

Some instructors talked about saving time when using ICT. Incorporating ICT enables them to explain more during the lecture hours and sometimes have enough time to do extra things. Instructor (7) stated that "I use ICT in my teaching; you know with ICT everything is set, you can give more examples and teach more detail, when compared to using chalk and traditional methods, it takes time to write on the board". Instructor (9) also stated "I explain with slides because it takes more time to draw everything on the board and less time to explain them, however with the topic on the screen I explain more and give extra information".

Another objective stated was that with ICT, the instructors can make the topics easier to remember and understand for the students. By passing on their knowledge so students can learn the scope and contents of the course by being careful on how the instructional materials are presented. For example instructor (2) gave a scenario by saying "passing my notes to students without any mistyping, because I teach a programming course, so sometimes missing a semicolon in the codes makes a difference".

The instructors however agreed in a practical course, the main objectives of using ICT is for students to grasp the process and also participate in doing because you cannot just learn by listening. It is relevant in the students working life to be able to do these things. Instructor (4) gave an example, "in an operating system course, the practical aspect is essential; students who will be information technologist should at least have an idea on how an operating system works".

iii. Teachers' beliefs on how ICT aids motivate students:

The instructors believe ICT has contributed in motivating students especially now that everything is technology driven. Technology is everywhere, so students are familiar with the system and tend to concentrate as they are not worried about taking notes. Instructor (7) responded that "When I use ICT in my lecture, students are motivated to listen more, because for example the PowerPoint slides are visible when I teach, the students are focused on just listening instead of listening and writing long notes at the same time." Even in a situation whereby the teacher is writing on the board, in order not to miss the steps, students utilize their smartphones to take photos of the board and some bring their laptops to class to work with it. Instructor (5) said that

> "I believe ICT motivates students, for example in a lab where the computer RAM is not enough and it causes the computers to become slow, students now have the habit of bringing their own laptop to the lab to avoid any problem, like malfunction of computers or internet problem, so they are encouraged and excited to have the lab works personally done by them on their own system"

Also, the instructors believe that incorporating ICT into the lectures helps the motivation of the student in order to learn better. Especially when they know they have the opportunity of practice on a real system and not just watching videos or reading about it. Hence, they have more confidence of getting good grades and are motivated to work harder. Instructor (10) stated that "ICT improves confidence,

when the students produce something during practical; they feel they know it and are motivated to do more".

Although, with the availability of these ICT based materials the student maybe not want to listen in class. According to instructor (9) "sometimes the students complain that because the materials are available, I am explaining too much, they feel they have lots to study". Instructor (5) also said that "it may cause student not to listen in class, they just come to use social networks, mobile phones to send messages and not listen, because they know that the materials are available for them"

iv. Barriers in incorporating ICT:

Due to the nature of the department of study (IT department), teachers are familiar with using ICT, therefore most teachers admitted to not having any barrier. They said the time and resources are enough and available for them to use. Here are a few responses from the instructors: instructor (6), "At the beginning of the semester, I target to finish one chapter in one week, the time and resources is enough, I put online applications, case studies, e-learning sites, so everything is ok, I am not lacking." Instructor (9) responded "No limitation, if I do not teach with ICT I cannot complete the content of the course. There is enough time, hardware wise there are enough resources".

On the contrary, a few teachers agreed they don't have enough preparation time to incorporate ICT as they would like and the resources is not enough or insufficient, especially hardware. They suggested that the renewal of these resources would be better. Instructor (7) stated, "every semester I try to renew my materials to fit the technology because it is changing a lot. I try to update often actually the materials I use in my lecture I update them often. Sometimes we spend time turning on the projectors or computers which takes up lecture time, so I feel they should be

renewed." Instructor (5) went ahead to give a more personal dilemma usually faced when using ICT saying

> "I do sometimes question myself, which software should I use or did I use the right software. It is not easy deciding how to conduct the practical aspect of a course especially when there are changes in the software. There are about 5-6 software doing the same time and I have to decide on which to use in the lecture, I consider the compatibility with the operating systems and follow the changes, in a year a software can go from version 5 to version 9 with new features added or old ones deleted so I have to be always prepared."

However, all instructors usually face some minor problems during the lectures like electrical problems which they cannot do anything about. Sometimes it is internet related problem and they get the right person to fix it. Although in rare cases, these minor issues may lead to cancelling the class. Instructor (2) said "when I am solving a question asked by the students I would like to upload it to my website in class, but due to network problem, I can't. But it is a minor issue because my class goes on and I can wait for the problem to be solved". Instructor (3) stated that "facing these minor problems is normal, but the primary aim is to fix it as soon as possible and continue with the lecture. I have knowledge about computer related issues so I try to fix it myself in order not to lose time, anything else for example projector issue I get help ". Instructor (8) added "the students misuse this equipment, they don't shutdown correctly and it collapses the system which may interrupt the next class because the good equipment would not be enough."

v. *Deciding on the effectiveness of teachers Incorporating ICT:*

Most instructors responded to deciding on the effectiveness of their ICT based instructional material from the feedback gotten from the survey distributed to the students at the end of the academic semester. They go through the students' response and adjust their methods for the next semester. However, some teachers take a more immediate approach in deciding about their strategy used in the class. Instructor (3)

stated that “with the results of my exams, homework if everybody fails then I know it is related to my strategy maybe I didn’t use the right tools or techniques to explain, especially if those that attend regularly to the course didn’t do well to.” Another instructor (5) also said the same

> “I use the feedback from my assignment and also students complaining if they had a problem, for example if majority of the student could not install a software, I try to give a more detailed explanation in the class and add it to my material and also be more available to the students. If the software is problematic, I change it the next semester”

Instructor (10) said ” I try to be more flexible in my teaching, I look at the students faces and if they look confused even after I explain, I use another approach ”

Using ICT cannot be avoided in some cases, especially when teaching in a technology driven area. Instructors with background and disciplines like IT, software engineering, computer sciences, computer engineering do not have a hard time incorporating ICT into their lecture, class projects. They need no training due to experience but may need little practice to adapt to new technology.

Instructors incorporate ICT to save time and ICT makes it easier to explain some difficult areas to the students by using videos, animation etc. and these ought to accommodate different learning styles. The results of these findings revealed a lot about instructors and their use of ICT. Using ICT is convenient for both the students and the instructors. ICT improves student confidence in carrying out tasks just as Henderson, Huang & Grant (2012) found in their study that ICT improves self-efficacy.

Knowing what students need at what time is important, so that the strategy used will be effective even if it leads to using a different approach. This study proves incorporating ICT can be challenging, especially because there are many ways to do the same thing and different tools to use. Technology is changing, you have to solve

old problems with new technology which can be challenging and it makes choosing the right ICT tool quite difficult.

Ertmer et.al (1999) suggested that to find the challenges faced by instructors incorporating ICT into instructions, it is important to look into their beliefs, practices and available resources. From this study, if can be seen that the teachers have a positive belief about ICT; they feel it is important; it motivates students and is beneficial to the students. The instructors try to integrate ICT into their instructions even though these same ICTs can sometimes be described as distracting to the students. When instructors have practice and use ICT daily, they have no barrier in that area, because of their familiarity with ICT and incase of minor problems, they know what to do. It can be said that with experience and usage of ICT, it decrease the amount of limitation that the instructors may likely face. Although, time and especially resources can be seen as the major barrier here but it depends on the nature of the course these instructors teach. Courses that are more practical and deal with the latest technology are likely to have resources as a barrier. New programs or software are been updated or produce, staying current on the latest trend and learning it may seem difficult to handle and no enough time to integrate these ICT into the materials.

Chapter 5

CONCLUSION

The main purpose of this study is to determine the motivational effect of ICT based instructional materials on students alongside with the challenges faced by instructors while producing these instructions. Motivation in students is important in order to learn and as ICT based instructional materials are used nowadays, it is important that they are designed with the motivational strategies. Learning can be improved with ICT and as it advances, it is important for students and instructors to be involved in it. With the learners' participation and motivation towards these instructional materials, the teaching and learning process can be effective. There are factors that often hinder with the advancement and transfer of these instructional materials and they affect every instructor in one way or the other.

This study proves that the motivational needs of students are lacking and it was found that the instructional materials currently in use do not highly motivate the students mostly because the instructional material does not grasp the students' attention; they can be described as dry and unappealing.

Also, it was found that in a computer based field, the instructors do not really have much limitation when it comes with incorporating ICT into their lecture. Mostly because they have the experience and proper training although, time might not be enough for some practical course and resources can sometimes be insufficient.

5.1 Recommendation and further research

Based on the findings of this research, student motivational level from their instructional materials was found to be on the average and as a recommendation; Instructional materials should be designed with the ARCS model in mind. The ARCS model can be incorporated step-by-step into any instructional design model which makes it flexibility and easy to use. To input the ARCS element, here as some suggestions:

- **Attention:** Materials should be designed to be eye-catchy and attractive. Colors, appropriate fonts animations etc. should be useful. At this point it can be said that, instructional materials should be made interactive so that the students can be more involved and focused with their materials.
- **Relevance:** More examples should be added to lecture materials to relate to how the topics reflect in the outside world. The latest technology should be used so the students can see the importance of a topic and are familiar with the technology. Extra resources, like links, videos can be shared in order to show how it used in the working place.
- **Confidence:** The materials should be well organized and should be understandable, the right language and appropriate terms should be used, in cases of new technical terms, a glossary should be provided. The students should be confident after reading that they learnt, what they were supposed to learn which in turn improves their self-efficacy.
- **Satisfaction:** Intrinsically and extrinsically motivated students should be able to derived satisfaction after reading their lecture materials. Practices module should be given at the end, when students attempt these practice modules successfully they get satisfied about their knowledge on the topic.

From this study, instructors said that there is a drop in students' motivation, so for further research the reasons for students lacking intrinsic motivation should be investigated.

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APPENDICES

Appendix A: Permission Letter to Conduct Research

PERMISSION TO CONDUCT RESEARCH IN THE SCHOOL OF COMPUTING AND TECHNOLOGY: IT DEPARTMENT

The director,

School of computing and technology,

Eastern Mediterranean University

12-05-2014

Dear Sir,

As a requirement for my thesis to complete my master's program from the department of Computer and Instructional Technology Teacher Education (CITE) I am conducting a study on "Students' motivation on ICT based instructional materials and the challenges instructors face: A case study of IT department". The purpose of this study is to examine the motivational influence of instructional materials on students and the challenges faced by instructors while designing these ICT based instructions. The study will involve instructors based on their computer based instructional materials to participate in a face-to-face interview and also students to fill a closed ended questionnaire via email.

I am therefore, seeking your permission to conduct this study with all instructors and students in your department. I assure you that the information obtained in the interview and questionnaire will be kept in the strictest confidence and will only be used for the stated purpose. The privacy of all participants involved in the study will be kept in the strictest confidence.

It is hoped that this study will serve as a reference to instructors, to help improve their instructional materials as a medium for teaching in order to aid students' motivation and to optimize learning. It can also serve to reveal to the school administration and faculty the steps that are overlooked or needed resources that can help enhance the quality of education.

Thank you for your consideration.

Yours sincerely,

_____

Petovie Gospel Edori

Appendix B: Students' Informed Consent Slip

Consent to Participate in a Research Study

Students' motivation on ICT based instructional materials and the challenges instructors face: A case study of IT department

Dear students,

I am taking a self-evaluation on students motivation regarding computer based lecture materials as part of my thesis to complete my master's program from the department of Computer and Instructional Technology Teacher Education (CITE). The purpose of this study is to examine the motivational influence of instructional materials on students and the challenges faced by instructors while designing these computer based instructions.

Participating in this study is completely voluntary. Even if you decide to participate now, you may change your mind and stop at any time. You may choose not to answer questions for any reason.

There are no risks associated with this study because you may complete the questionnaire anonymously and all individual responses will be treated confidentially and the topic is not sensitive.

To help in this evaluation, I would be very grateful for your views on the matters in the questionnaire. The questionnaire should take between 10 and 15 minutes to complete.

Thank you very much.

Petovie Gospel Edori

Appendix C: Instructors' Informed Consent Slip

Consent to Participate in a Research Study

Students' motivation on ICT based instructional materials and the challenges instructors face: A case study of IT department

Dear Instructors,

I am conducting a research on students motivation regarding computer based lecture materials as part of my thesis to complete my master's program from the department of Computer and Instructional Technology Teacher Education (CITE). The purpose of this study is to examine the motivational influence of instructional materials on students and the challenges faced by instructors while designing these ICT based instructions.

Participating in this study is completely voluntary. Even if you decide to participate now, you may change your mind and stop at any time. You may choose not to answer questions for any reason.

There are no risks associated with this study as I assure you that the information obtained in the interview will be kept in the strictest confidence and will only be used for the stated purpose. No personal data about you is required and as such your anonymity is assured.

To help in this study, a face to face interview will be carried out with you. Please note that the interview will be recorded in order to be transcribed later. The interview should take between 20 mins to 30 mins to complete.

Thank you very much.

Petovie Gospel Edori

Appendix D: Questionnaire

The following questions are adapted from the Instructional Materials Motivation Survey developed by Dr John Keller, Copyright © 1993, John M. Keller.

There are 36 statements in this questionnaire. Please think about each statement in relation to the lecture materials used in all your courses and indicate how true it is. Give the answer that truly applies to you, and not what you would like to be true, or what you think others want to hear. Think about each statement by itself and indicate how true it is. Do not be influenced by your answers to other statements.

A. Demographic Information

Gender

○ Male ○ Female

Which year are you?

○ First ○ Second ○ Third ○ Fourth

B. Instructional Materials Motivation Survey

Please answer each of the questions listed as it applies to you by selecting number ranging from 1 to 5 in the box that best identifies your response to the question according to the numerical scale offered below.

1 = Not true, 2 = slightly true, 3 = moderately true, 4 = Mostly true, 5 = Very true

1. **When I first looked at the lecture materials, I had the impression that it would be easy for me.**

   Not true **1** **2** **3** **4** **5** Very true

2. **There was something interesting at the beginning of the lecture materials that got my attention.**

   Not true **1** **2** **3** **4** **5** Very true

3. **The material was more difficult to understand than I would like for it to be.**

   Not true **1** **2** **3** **4** **5** Very true

4. **After reading the introductory information, I felt confident that I knew what I was supposed to learn from the lesson.**

   Not true **1** **2** **3** **4** **5** Very true

5. **Completing the exercises given in a lesson gave me a satisfying feeling of accomplishment.**

Not true **1** **2** **3** **4** **5** Very true

6. It is clear to me how the content of lesson material is related to things I already know.

Not true **1** **2** **3** **4** **5** Very true

7. Many of the pages had so much information that it was hard to pick out and remember the important points.

Not true **1** **2** **3** **4** **5** Very true

8. The lecture materials are eye-catching.

Not true **1** **2** **3** **4** **5** Very true

9. There were stories, pictures, or examples that showed me how these materials could be important to some people.

Not true **1** **2** **3** **4** **5** Very true

10. Completing lessons successfully is important to me.

Not true **1** **2** **3** **4** **5** Very true

11. The quality of the writing and fonts helped to hold my attention.

Not true **1** **2** **3** **4** **5** Very true

12. The lecture materials are so abstract that it is hard to keep my attention on it.

Not true **1** **2** **3** **4** **5** Very true

13. As I worked on my lecture materials, I was confident that I could learn the content.

Not true **1** **2** **3** **4** **5** Very true

14. I enjoy the lessons so much that I would like to know more about the related topics.

Not true **1** **2** **3** **4** **5** Very true

15. The lecture materials look dry and unappealing.

Not true **1** **2** **3** **4** **5** Very true

16. The contents of the materials are relevant to my interests.

Not true **1** **2** **3** **4** **5** Very true

17. The way the information is arranged on the material helped keep my attention.

Not true **1** **2** **3** **4** **5** Very true

18. There are explanations or examples of how people apply the knowledge in these lessons.

Not true **1** **2** **3** **4** **5** Very true

19. The exercises in the lesson are too difficult.

Not true **1** **2** **3** **4** **5** Very true

20. The lectures have things that stimulate my curiosity.

Not true **1** **2** **3** **4** **5** Very true

21. I really enjoy studying my lecture materials.

Not true **1** **2** **3** **4** **5** Very true

22. The amount of repetition in the lecture materials causes me to get bored sometimes.

Not true **1** **2** **3** **4** **5** Very true

23. The content and style of writing in the material convey the impression that its content is worth knowing.

Not true **1** **2** **3** **4** **5** Very true

24. I learned some things that were surprising or unexpected.

Not true **1** **2** **3** **4** **5** Very true

25. After working on the materials for a while, I was confident that I would be able to pass a test on it.

Not true **1** **2** **3** **4** **5** Very true

26. The lessons are not relevant to my needs because I already know most of it.

Not true **1** **2** **3** **4** **5** Very true

27. The wording of feedback after exercises helped me feel rewarded for my effort.

Not true **1** **2** **3** **4** **5** Very true

28. The variety of reading passages, exercises, illustrations, etc., helped keep my attention on the lesson.

Not true **1** **2** **3** **4** **5** Very true

29. The style of writing is boring.

Not true **1** **2** **3** **4** **5** Very true

30. I could relate the content of the materials to things I have seen, done, or thought about in my own life.

Not true **1** **2** **3** **4** **5** Very true

31. There are so many words on each page that it is irritating.

Not true **1** **2** **3** **4** **5** Very true

32. It felt good to successfully complete a lesson.

Not true **1** **2** **3** **4** **5** Very true

33. The contents of the materials would be useful to me.

Not true **1** **2** **3** **4** **5** Very true

34. I cannot really understand quite a bit of the material in my courses.

Not true **1** **2** **3** **4** **5** Very true

35. The good organization of the content helped me be confident that I would learn the material.

Not true **1** **2** **3** **4** **5** Very true

36. It is a pleasure to work on such a well-designed material.

Not true **1** **2** **3** **4** **5** Very true

Appendix E: Interview Questions

1. How long have you been teaching?
2. What are the characteristics of students before and now?
    - Are there changes in terms of motivation?
3. How long have you been using ICT in your teaching?
    - In what areas of your lessons do you use ICT?
4. When using ICT in your in teaching, what are your objectives or intentions?
5. Do you design materials with motivation in mind?
    - How?
6. From your own perspective how has ICT aided student motivation?
7. What are some of the constraints or limitation (in terms of resources, time etc.) in using ICT in your teaching that you experience?
    - How do you try to overcome these limitations?
    - How will u improve if these resources were provided?
8. Please describe an example of a technology problem that you experienced in the classroom.
    - How long did it take you to solve it?
    - Did you need anyone to help you solve it?
9. Explain how you decide whether an instructional strategy using technology was effective or not.

Appendix F: IMMS Scoring Manual

Manual for the *Instructional Materials Motivation Survey* (IMMS)

John Keller
Florida State University

Purpose

The Instructional Materials Motivation Survey is intended to be a situational measure of students' motivational reactions to instructional materials. It was designed in accordance with the theoretical foundation represented by the ARCS Model (Keller, 1987a, 1987b). This theory is derived from the current literature on human motivation; hence, many of the items in the IMMS are similar in intent (but not in wording) to items in established measures of psychological constructs such as need for achievement, locus of control, and self-efficacy, to mention three examples.

Method

After reviewing the concepts and strategies that comprise the ARCS model and a variety of instruments used to measure motivational constructs, a pool of items was prepared.

Results

Reliability estimates based on Cronbach's alpha measure were obtained for each subscale and the total scale. They were:

Attention: .89 Confidence: .90 Total Scale: .96

Relevance: .81 Satisfaction: .92

In a validation study, differences in two sets of instructional materials with respect to format, content, and other features affecting motivation were reflected in the differences in scores on the IMMS.

Note:

Additional information concerning the development of this survey and the results of the validation study will be included in the next draft of this document.

IMMS SCORING GUIDE

The response scale ranges from 1 to 5. This means that the minimum score on the 36 item survey is 36, and the maximum is 180 with a midpoint of 108. The minimums, maximums, and midpoints for each subscale vary because they do not all have the same number of items.

An alternate scoring method is to find the average score for each subscale and the total scale instead of using sums. For each respondent, divide the total score on a given scale by the number of items in that scale. This converts the totals into a score ranging from 1 to 5 and makes it easier to compare performance on each of the subscales.

There are no norms for the survey. As it is a situation specific measure, there is no expectation of a normal distribution of responses. As data become available from a variety of applications of the scales, descriptive statistical information will be published.

Scores are determined by summing the responses for each subscale and the total scale. Please note that the items marked *reverse* are stated in a negative manner. The responses have to be reversed before they can be added into the response total. That is, for these items, 5 = 1, 4 = 2, 3 = 3, 2 = 4, and 1 = 5.

Attention	2, 8, 11, 12 (reverse), 15 (reverse), 17, 20, 22 (reverse), 24, 28, 29 (reverse), 31 (reverse)
Relevance	6, 9, 10, 16, 18, 23, 26 (reverse), 30, 33
Confidence	1, 3 (reverse), 4, 7 (reverse), 13, 19 (reverse), 25, 34 (reverse), 35
Satisfaction	5, 14, 21, 27, 32, 36

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