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*The effect of Some Different Types of Learning Within
Training Programs in Terms of Self-Determination Theory of
Motivation on Developing Self- Academic Identity and
Academic Buoyancy and Decreasing of Mind Wandering
Among University Students in Egypt*

BY

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Abstract

The research figured out the effectiveness of three variant types of learning presented in training programs in terms of self-determination theory of motivation on developing self- academic identity and academic buoyancy and mind wandering. Three educational types for learning; blended e-learning, virtual learning, and traditional face-to-face learning were compared. Two approaches conducted in this study; a quantitative approach, that is given complementary importance, accompanying the qualitative approach with the quantitative one being embedded within the qualitative data in the research. The combination of different data collection methods aimed to reduce potential limitations of the research method's implication. Academic identity was found to strongly predict academic integration within the three training programs: Blended e-Learning with traditional face-to-face learning and Virtual Learning. Academic integration additionally seems to be a mediator to predicting other learning outcomes that include research performance, commitment to learning activities, and school time management. Mind-wandering related to performance independent of the type of a training program as a determinant of performance. Ultimately, not all training programs are equally beneficial to learners in terms of enhancing proper motivation for learners' success within the education environment.

Keywords: Types of Learning- Self-Determination Theory- Academic Buoyancy- Academic Identity- Mind Wandering.

تأثير بعض الأنواع المختلفة للتعلم والمستخدم في البرامج التدريبية المبنية في ضوء نظرية التحديد الذاتي للدافعية في تنمية الهوية الأكاديمية الذاتية والطفو الأكاديمي وخفض درجة التجول العقلي بين طلبة الجامعات المصرية

مستخلص البحث

كشف البحث عن تأثير ثلاثة أنواع للتعلم والمدمجة ضمن البرامج التدريبية المبنية في ضوء نظرية التحديد الذاتي للدافعية في تنمية كل من الهوية الأكاديمية الذاتية والطفو الأكاديمي وخفض درجة التجول العقلي. ثلاثة أنواع مختلفة من طرائق تقديم التعلم هي؛ التعلم المدمج، والتعلم الافتراضي، والتعلم التقليدي وجهاً لوجه. وقد تم التطبيق على عينة مكونة من (٥٠٠) من طلبة الجامعات المصرية، واستخدم البحث منهجين مختلفين؛ الأول: المنهج الكمي، والثاني هو المنهج النوعي عبر (١٠٠) مقابلة شخصية. وقد دُمج وضُمّن المنهج الكمي في بيانات المنهج النوعي بالبحث حتى يعطي الموثوقية والتعميم في نتائج البحث؛ وهدف هذا الجمع بين طرائق جمع وتحليل البيانات إلى تقليل القيود المحتملة في نتائج البحث. وكشفت النتائج أن الهوية الأكاديمية الذاتية منبئ قوي بالتكامل الأكاديمي لكل من البرامج التدريبية-التعليمية الثلاثة بما تتضمنها من: التعلم الإلكتروني المدمج، مع التعلم التقليدي وجهاً لوجه، والتعلم الافتراضي. بالإضافة إلى أن التكامل الأكاديمي هو بمثابة وسيط للتنبؤ بنتائج التعلم الأخرى التي تشمل: الأداء البحثي، والالتزام بأنشطة التعلم، وإدارة الوقت. وقد ارتبط التجول العقلي بالأداء بشكل مستقل عن نوع البرنامج التدريبي وعمل كمحدد للأداء. وليس كل البرامج التدريبية المستخدمة مفيدة بشكل متساوٍ للدارسين من حيث تعزيز الدافع المناسب لنجاحهم.

الكلمات المفتاحية: أنواع التعلم- نظرية التحديد الذاتي للدافعية-الهوية الأكاديمية الذاتية- والطفو الأكاديمي والتجول العقلي- طلبة الجامعة.

1. Introduction

Motivation is a fundamental element in the educational system. Education systems are constantly seeking ways to provide learners with innovative methods for developing and enhancing their motivation for learning and future development.

Education and learning continue to progress in using interactive technology, and the internet infrastructure has particularly become commonplace within the education environment. Information technology has also become accepted as an education method that can enhance motivation within higher education.

Bradley et al. (2017) explain that within the learning environment, motivation refers to the enthused engagement of learners with the learning process resulting in high perseverance and low latency in terms of engagement with the task of learning.

1.1 Background Information

Due to the rapid advancement in technology, technological infrastructure has increasingly become incorporated into educational learning in producing different models of training programs.

An example of a training program that is increasingly finding traction in Egypt is that use the Blended e-Learning, which involves combining the internet and computer infrastructure with traditional training methods in delivering education (Noour & Hubbard, 2015; El Alfy et al., 2017; Amin et al., 2019).

Blended e-Learning is a new model of educational instruction delivery that involves technology modification of the Traditional Face-to-Face Learning approach (Alabaddi et al., 2016; Kristanto, 2017).

1.2 Problem Statement

Learners often suffer the absence of intention for engagement with the learning process due to a lack of the proper motivation for learning and academic achievement, resulting in dysfunctional academic identity and mind wandering within the learning setting.

The paper explained the effect of the different training programs presented on educational settings on mind wandering, motivation, academic buoyancy, and academic identity based on the illustrations of the theory of self-determination.

It is achieved by comparing Blended e-Learning motivation to other training programs found within major universities in Egypt.

1.3 Problem Gap and Justification

As to whether Blended e-Learning leads to improvement in learners' intrinsic and extrinsic motivation, hence improved academic performance, remains a much-debated subject (Regmi & Jones, 2020), however, until now, limited research exists with relation to the opportunities and challenges of using Blended e-Learning for the motivation of learners within higher education environments.

Therefore, the study aimed to fill the gap by focusing on identifying the effectiveness of the different types of education style like that related to Blended e-Learning through the Self-Determination Theory of Motivation.

Research Questions

The research questions are based on the notion that the growth in the using of advanced technology in learning environments has enabled education to benefit learners and instructors through training programs, such as Blended e-Learning and Virtual Learning, methods resulting in increased in learners' motivation levels, functional academic identity formation, academic buoyancy, and minimal mind wandering within the learning environment.

Q1: How does the different type of educational training program relate to the learners' situational motivation that leads to the choice to pursue as well as achieve positive academic outcomes?

Q 2: How do the different type of educational training programs affect the learners' perception of the learner's psychological need satisfaction and uncertainty within the education setting and their influence on academic identity formation and academic buoyancy?

Q 3: What is the effectiveness of different types the training programs that based on the Self-Determination Theory of Motivation on developing academic identity, academic buoyancy, and mind wandering?

1.4 Research Objectives

In the attempt to fill the gap of limited previous research on the impact of training programs on academic identity development, academic buoyancy and mind wandering, an embedded correlational mixed method research was conducted to systematically examine the contribution of the different training program types on learners' motivation and school achievement within higher education settings.

The research paper had the following objectives:

1. To investigate the relationship between the type of academic training program and the affective learning performance, outcomes and learning achievement among university students in Egypt.

2. To examine how academic training programs, influence academic identity development, academic buoyancy, and mind wandering among Egyptian university learners, how it has influenced the Self-Determination Theory of Motivation.

1.5 Research Significance

3. Considering the problem as mentioned earlier, there is the need to focus research on how the development of self-determination influences academic identity formation, academic buoyancy, and mind wandering among higher education students, as well as how teaching programs can encourage self-determination at the higher education level.

4. Hence, the significance of this research is to determine how certain types of training programs influence self-determined motivation, so that a conceptual framework can be developed to understand the effectiveness of training programs in academic identity formation, academic buoyancy, and self-determined motivation.

5. This research will also explain how higher education learners know and construct reality and the concepts of self-determination, motivation, self-regulated learning, and learning and thinking styles in relation to available training programs.

1.6 Research Hypothesis

Due to the limited previous research on the effect of training programs on the perceptions of empowerment related to learning motivation among Egyptian university students, the relationship between training programs and self-determined motivation and academic achievement remains ambiguous.

Considering the need for defining the relationships between training programs and self-determined motivation and academic accomplishment methodologically, and considering the overlapping theoretical work relating to academic identity development, academic buoyancy, and mind wandering, the following hypotheses are posed:

H1: The different type of educational training program relate to the learners' situational motivation that leads to the choice to pursue as well as achieve positive academic outcomes.

H2: The different type of educational training programs affect the learners' perception of the learner's psychological need satisfaction and uncertainty within the education setting and their influence on academic identity formation and academic buoyancy.

H3: There are significant difference of variant types the training programs that based on the Self-Determination Theory of Motivation on developing academic identity, academic buoyancy, and mind wandering.

2. Literature Review

The Self-Determination Theory is a general framework for understanding human motivation (Adams et al., 2017). The theory has seen rapid growth as a theory of motivation, especially within the academic literature, and has been used in examining and addressing individual behavior initiation (Grolnick, 2015).

Traditionally, the Self-Determination Theory became acknowledged as providing a framework for addressing human motivation resulting in the discovery of certain factors that could challenge the concept of intrinsic motivation (Deci & Ryan, 2008).

These include certain performance-contingent reward categories, stresses of time, possibility of punishment, and some competition (Simons et al., 2019).

Various studies indicate the differences between extrinsic and intrinsic motivations about the impact of reward on intrinsic motivation related to situational behavior (Delaney & Royal, 2017).

Consequently, the seminal work by Edward Deci and Richard Ryan has resulted in the rapid increase in an attempt to coin the Self-Determination Theory (Deci & Ryan, 2008).

The theory considers interpersonal behavior as a dynamic entity regulated by the need for autonomy, competence, and mutual respect, all of which comprise three universal Basic Psychological Human Innate Needs. Autonomy needs refer to the experience of free choice by individuals through the taking of own options, competence refers to the feelings that accompany the achievement of desired outcomes (Flannery, 2017), while mutual respect is the experience of meaningful relatedness

between companions because of esteem in the relationship (Howard et al., 2016).

Due to the various barriers to the successful development of academic identity by college and university students, studying the factors that predict the successful formation of effective academic identity is critical.

Self-determination has been linked to a wide range of learning and educational performance outcomes among students. These include better psychological and physical health, self-esteem enhancement, and general well-being (Ryan & Deci, 2016).

With the current increase in empirical support of self-determination as a vital element that leads to successful education and learning outcomes among students (Khan et al., 2018), it is clear that a high level of self-determination leads to better performance learners (Filak & Nicolini, 2018).

The Self-Determination Theory offers an understanding framework for specific aspects of academic identity formation and associated strengths and weaknesses about positive learning outcomes for higher education students (Burke et al., 2019).

2.1 Development of Academic Identity and Self-Determination Theory of Motivation

Self-identity has been used interchangeably within identity literature (Cribbs et al., 2015; Tonso, 2014), however, within the Self-Determination Theory (Ryan & Deci, 2016) self and identity are differentiated in meaning with the assertion that identities are variable to the extent of congruency with fundamental growth predispositions of the self, which are controlled through principal psychological needs for competence, autonomy, and esteem.

Lock and Heere (2017) particularly consider that the degree of congruence between identities and the self depends on the underlying motives for commitment to identities, such as choice and pressure; and the goal contents that define identity, like extrinsic or intrinsic motivations.

Vansteenkiste et al. (2018) similarly assert that the goals and the motives that drive an individual's identity form a vital element for effective function because of the link to fundamental need satisfaction.

2.2 Self-Determination Theory of Motivation and Academic Buoyancy

Academic buoyancy is a student's competence in proficient response to daily learning challenges and is recognized as a critical factor of achievement-related student functioning. Academic buoyancies are influenced by efforts at satisfying the needs of relatedness, autonomy, and competence (Ryan & Deci, 2017).

Academic buoyancy is, however, mainly a function of autonomous categories of motivation related to a student's successful performance in learning.

The student's academic buoyancy within the normative education environment is predicted by their need satisfaction and autonomous motivation, while academic buoyancy itself mediates interactions between self-determined student's motivation and academic accomplishment.

However, the student's need frustration also negatively predicts self-determined autonomous motivation, as well as academic buoyancy.

Aydin and Michou (2019) have found that high need satisfaction supports academic buoyancy, while high need frustration results in lower academic buoyancy. Subsequently, high autonomous motivation is also seen to support the student's academic buoyancy, leading to enhanced academic achievement in educational settings.

Abdi and Zandipayam (2019) also observed that students who are supported by specific training programs to develop proficiency have also positively developed academic buoyancy and achieved higher standards of learning skills.

Similarly, Skinner et al. (2020) note that educational settings are supported within such a specific training program. These students face academic setbacks but develop high levels of academic buoyancy to succeed in their education by responding positively to the demanding educational circumstances.

In their research, Abdi and Zandipayam (2019) support the perspective of Skinner et al. (2020) by showing that training programs, such as Blended e-Learning, enable students to face academic challenges, among which there are difficult assignments and weak performance in examinations.

Collie et al. (2017) demonstrate the perspective that academic buoyancy among students is enhanced by the expectancy created through

specifically designed training programs that influence self-efficacy and anxiety as aspects of motivation and persistence.

2.3 Self-Determination Theory of Motivation and Mind Wandering

Globally, it has been considered that students are motivated to perform learning tasks well with task-unrelated thoughts (TUTs) occurring during learning, only reflecting unwanted and unintentional thoughts (Churchill, 2019).

However, considering the comparatively tiresome and sometimes tedious nature of academic learning tasks, students may suffer from the low motivation for academic tasks, which results in increased mind wandering through intentional TUTs.

In exploring mind wandering among students, Pachai et al. (2016) found that students who are least motivated to achieve sustained learning tasks report more intentional TUTs than students with higher motivation.

Findings by Hollis and Was (2016) indicate that the extent of student engagement in intentional TUTs compared with unintentional TUTs has no differential relationship with academic performance.

Wammes et al. (2019) similarly note that both kinds of mind-wandering thoughts are equally related to a decrease in performances.

Ergas (2016) notes that students with lower academic task motivation also exhibit more overall TUTs. Mind wandering within the educational setting has been recognized as a major hindrance to students' performance and achievement.

3. Methodology and Materials

By examining the impact of using blended learning by educators in higher education and comparing with other types of training programs together with their outcomes within the higher education environment, particularly, in terms of learners' perspectives and their motivation for learning performance as well as outcomes, this research will reveal whether the type of training program used affects the enthusiasm and engagement of learners with the learning process, as well as what impact training programs have on a learner's perseverance, latency, and engagement with the task of learning. All of these factors influence Academic Identity, Academic Buoyancy and Mind Wandering.

3.1 Research Philosophy

The research philosophy in this study represents the foundation of inquiry in this research. The research philosophy employed here is a constructivist framework based on the search for understanding and significance of phenomena from participants and their perspectives (Adom et al., 2016).

This constructivist philosophy, also being characteristically less obtrusive, permits participants' viewpoints to emerge instead of benefiting the researcher by permitting only their opinion.

This constructivist paradigm will permit the study participants to present facts and information through an understanding defined by the participant's own experiences, as well as interactions with the environment under study.

This constructivist research philosophy also enables the development of individual viewpoints into general relationships, and eventually into theory (Taylor, 2018). The constructivist research philosophy in this study also enables the expression of multiple realities from different self-motivated study participants. Further, it supports the collection of data from willing participants familiar with the environment, in this case, students at their study institutions. The research philosophy may be considered the pattern of reality, which actively impacts what is perceived as true, acceptable, or possible (Bleiker et al., 2019).

3.2 Research Method

Since this is an educational psychology study, several significant research methods are discussed within the research methodology literature (Coccia, 2018). In this research, mixed methods that also include an augmented case study are used. The research developed a research methodology from the perspective of a mixed approach: quantitative and qualitative study. The methodology involved collecting and analyzing qualitative and quantitative data from the research field, where the collection may be concurrent or sequential. The mixed-methods also involve integrating the collected data at some particular study stage within the research process.

3.3 Mixed Methods Design

In this research, the key processes of training programs and the impact of training programs on students' learning accomplishments within education environments at universities, particularly in Egypt and

more generally across the developing and developed areas, are explored, investigated, described, analyzed, and interpreted. This research combines the conventional elements of qualitative and quantitative approaches into an embedded correlational concurrent mixed methods approach for collecting and analyzing data.

Quantitative methods are used in identifying practices perceived as useful by the study participants. In contrast, qualitative methods are used to critique and interpret phenomena related to the experiences, perceptions, and settings faced by participants within the educational environment.

This approach conforms to the dichotomous inquiry classification of confirmation alongside exploration. Likewise, this class of inquiry is direct, recurrently using inductive and deductive reasoning.

Data collection was primarily conducted concurrently through questionnaires and interviews with the various identified participant individuals and groups at selected universities in Egypt.

Quantitative and qualitative data and views on training programs and their impact on Academic Identity, Academic Buoyancy, and Mind Wandering were collected from a selected participant in the selected universities in Egypt.

3.4 Participants, Population, and Sample

In this research, the population consists of ten groups of students from ten universities in Egypt. Table 1 outlines the groups of student respondents that make up the sample and population for the study.

The university and participant selection was conducted by combining probability sampling techniques with non-probability ones in choosing the target respondents.

A maximum variation sampling strategy is used for the qualitative dimension for yielding a detailed description of divergent events and facts, while common themes are also identified.

Probability sampling is used in selecting the universities and participants where prospective participants appear homogeneous.

In contrast, non-probability sampling has been used to select participants, where the prospective participants appear considerably varied.

The researcher identified ten institutions of higher learning in Egypt as locations to provide information and sent request for conducting interviews among purposively sampled students.

Seven of the universities had Blended e-Learning-related training programs alongside conventional training programs within their curricula, while the remaining three were using the conventional and other forms of training programs.

Concerning quantitative data, 500 post-graduate students in their master's studies in all the universities at the time of collecting data were identified as participants in the questionnaire section of the research, and sample of students from each university were included in the overall sample.

Each student research participant was mailed a copy of self-addressed and stamped questionnaires for return.

Table 1
Participants and Respondents

Location	Sample	Questionnaires	Interviews
Zagazig University	70	70	10
Mansoura University	45	45	10
Suez Canal University	50	50	10
Beni-Suef University	40	40	10
Cairo University	52	52	10
Kafrelsheikh University	48	48	10
Ain Shams University	50	50	10
American University in Cairo	40	40	10
Benha University	55	55	10

A combination of purposive and convenience sampling was used in participant selection for interviews resulting in the number of students considered suitable for interviews, as shown in Table 1.

The student participants comprise of post-graduate students in their master's studies of each of the universities selected.

In this research, students in each university were identified as prospective participants for interviews, and through convenience sampling, a sample of 10 students in each university was selected as interview participants.

In this research, an attempt was made to integrate the interpretations of the interview descriptions with the views considered from the reviewed literature in a hierarchical approach, representing the linkage between the research paradigm and the process descriptions within this research. Closely-connected hierarchical forms are given.

3.5 Tools and Instruments

The research employed the use of various tools, including the questionnaire, three scales of the dependent variables, interview, and the sessions through the training program. These tools are implied to provide a unique understanding of the phenomena related to training programs impact on learners' motivation.

This research is a similarly embedded case study involving multiple units of analysis, reaching the qualitative analysis dimension to enable multiple method applications within each unit.

Considering that a research case study occurs given its environment, the supplemental conception in this research is the enhanced aspect, focused on an analysis of issues relating to one type of training program, Blended e-Learning. Simultaneously, data from other differently designed training programs from universities enhances the central theme in this research.

The supporting data from the universities about other training programs is used to make the central case well-defined. The main data collected from the university students relates to the Blended e-Learning training program.

3.6 Data Collection

In addressing the research questions and the motivation needs of the different participants, perceptions about the role and impact of training programs on learners' motivation, training program practices and activities, as well as personal and university's input in learning practices, the previously discussed research methods applied the questionnaire and interview data collection methods for quantitative and qualitative approaches.

For the interview data, views, and opinions were captured with the use of a note-taking method. The use of questionnaires with the students enabled collaborating with many students, while allowing broader views.

The research questionnaire was designed with the support from a research consultant and statistician through the student research methods

program. Telephone calls were made to students selected randomly, requesting interviews with the students. Appointments were then made with the first 25 available in each university.

The student participants agreeing for an interview appointment were given a letter of introduction about self and the research. This research used self-administered questionnaires distributed to participant students in their universities.

The respondents from the ten selected universities located in Egypt were required to participate in questionnaires in English. Some needed translations.

This research examines post-graduate Egyptian university students' extrinsic and intrinsic motivations, autonomy, relatedness, and competence in implementing the Blended e-Learning concept at their universities.

Data obtained from questionnaires and interviews was coded and analyzed using the Invivostat Statistical software and SPSS for data analysis. The confirmation that the Self-Determination Theory verifies the study dimensions was conducted using CFA. SEM was additionally utilized for establishing the effect of training programs on learners' motives through the Self-Determination Theory.

3.7 Procedures

Five hundred students completed the questionnaire survey, while 100 students were interviewed within three types of training programs in the universities.

Three training programs were selected from each of the universities where they are applied. All three training programs are the English language-based, but all the students are Egyptian. The student distribution among the three training programs blending virtual learning, e-learning, and traditional face-to-face learning was 180, 130, and 190, respectively.

The participant students were instructed about the procedures of the study. The administration of the questionnaire was duly done during the periods of the semester and coursework period in the training programs. Having given their consent, the participating students anonymously completed the questionnaire, assessing their learning background variables, motivation towards learning, need satisfaction, and frustration that were specific to each one's course and training program.

The questionnaire also assessed Academic Buoyancy and Mind Wandering for each training program conducted for each participant. The qualitative research studied explicit evidence from the open-ended interviews alongside the thematic analysis of the resulting content.

3.8 Data Analysis

The student research participants indicated their university, age, gender, training program, and any course repeated. Students’ need satisfaction and frustration related to the training programs were evaluated by Basic Psychological Need Satisfaction and Frustration Scales (BPNSFS). For each of the training programs, eight elements evaluated need satisfaction with two elements for every need, including the need for autonomy (Chen et al., 2015). For instance, “I feel I have freedom and choice in the learning activities I perform”, $\alpha = 0.76$; the need for competence, for instance, “I am confident that I can do well in learning”, $\alpha = 0.70$; the need for relatedness, for instance, “I feel that the people I care about also care about me”, $\alpha = 0.67$.

Table 2
CFA and SEM

Model	χ^2	Df	CFITLI	RMSEA	90% CI RMSEA	Δ CM χ^2
CFA models						
Measurement model	2235.72	576	.92	.91	.042	[.040, .044]
Factor loaded invariance model	1422.65	670	.92	.90	.039	[.040, .044]
SEM model						
Uniqueness’s correlated model	1500.11	720	.92	.88	.039	[.040, .044]

3.8.1 Reliability, Validity, and Statistical Techniques

In this study, an internally consistent approach was implemented to measure and access the reliability of the research. The overtime instrument stability defines the effectiveness of the internal consistency instrument. It was exemplarily used to administer over five hundred students from different universities in Egypt during the plotting process. Based on the students’ coefficient reliability, the interviews and questionnaires were accessible through the samples from the universities within the country of Egypt. Internal consistency was achieved with a

pilot study in line with the study samples. The study also implemented the use of Cronbach Coefficient Alpha in accessing the correlation among the students. As indicated in Table 3 below, Cronbach Alpha was used in analyzing the test results of the reliability coefficient.

Table 3
Cronbach Alpha Reliabilities of the Study Variables

Number	questionnaires	Items	Cronbach Alpha
	Academic	22	0.76
	Buoyancy		
	Academic	18	0.83
	Identity		
	Mind Wandering	20	0.74

Eight elements evaluated need frustration with two elements for every need, including the need for autonomy, an example being “I feel that most of the learning I do is only because I have to”, $\alpha = 0.75$; the need for competency, for instance, “I seriously doubt whether I can do well academically”, $\alpha = 0.72$; the need for relatedness, for instance, “I feel left out of the group I prefer belonging to”, $\alpha = 0.65$. A confirmatory factor analysis (CFA) was first performed for verifying the measurement model adequacy and whether a satisfactory level of relationship existed between the indicators and the related latent variable. Table 3 shows the results. Loading a confirmatory factor analysis (CFA) on each of the 2-element sets to corresponding three latent factors resulted in an acceptable fit: $S - B_{\chi} (233, N = 396) = 288.137, p < 0.01, CFI = 0.899, SRMR = 0.53, RMSEA = 0.049 (95\% - CI: 0.041 \text{ to } 0.053)$.

Using the SRQ-A – Academic Self-Regulation Questionnaire, sixteen elements were employed in evaluating the quality student motivation towards learning in the training program consisting of elements measuring introjected, intrinsic, external, and identified regulations. The two-factor structure hypothesized CFA yielded a poor fit for controlled and autonomous motivation; hence, the exclusion of elements having less than a 0.30 factor loading ≤ 0.30 was excluded. The modification indices included the inclusion of correlated errors into the two-factor model between elements with a similar latent factor, with the latent factor of controlled motivation also loaded by the identified elements. Finally, 12 elements made up the resulting factor structure. The calculation of two aggregated controlled element scores resulted in the exclusion of one external motivation element. Three introjected

motivation element items were excluded with $\alpha = 0.73$ with autonomous motivation having $\alpha = 0.80$.

The twenty-two item Academic Buoyancy Scale was employed to assess academic buoyancy through the students' ability to overcome daily learning adversities within training programs, such as the self-reported proficiency in dealing with setbacks in university.

An acceptable fit was yielded from a CFA as follows: $S - B_{\chi} (3, N = 299) = 7.102, p < 0.01, CFI = 0.862, SRMR = 0.21, RMSEA = 0.094 (95\% - CI: 0.0291 \text{ to } 0.092)$.

Table 4
Mean Satisfaction with an Educational Training Program as a Function of Identity Formation

Condition	Blended e-Learning	
	Need Satisfaction	Need Frustration
Control	4.18	4.01
Identified	3.63	3.97
Intrinsic	4.00	4.93
Traditional Face-to-Face		
Condition	Need Satisfaction	Need Frustration
Control	3.26	3.51
Identified	2.55	2.85
Intrinsic	3.25	3.65
Virtual learning		
Condition	Need Satisfaction	Need Frustration
Control	2.21	2.92
Identified	2.03	2.03
Intrinsic	2.76	2.97

3.8.2 General Results and Correlation between Types of Educational Training programs

Particularly, more than half of post-graduate students identified with specific careers, such as engineering, medicine, and law. However, chi-squared tests substantiated a statistical significance for the difference between training programs with a p-value of less than 0.001.

The virtual learning program subgroup was the only one among the participating students who identified less than 50% academically. Conducting a logistic regression established that students in the traditional face-to-face training program were 50% as likely to identify academically as the students in the Blended e-Learning program, representing a 0.522 odds ratio. It was also found that both motivation and training program types were positive predictors of academic identity formation with $p < 0.001$. The relationship effects of intrinsic motivation and internal regulation were stronger for both Blended e-learning and face-to-face learning than for virtual learning with a p-value of less than 0.01.

Generally, students mainly recorded the reasons for learning within the conventional face-to-face training programs as external regulation. Students, together with reported significantly low motivation levels for both Blended e-Learning and traditional face-to-face training programs, also reported modest intrinsic motivation and introjected regulation. Correlations for the three training programs appear to follow the expected patterns based on the literature review, as shown in Table 4.

The Blended e-Learning and traditional face-to-face training program autocorrelations between intrinsic motivation and self-determination were strong with $r > 0.50$, indicating the stability of constructs with time.

3.9 Results and Discussion

In selecting the constructivist paradigm as the research philosophy, the guiding methodological question was how the chosen philosophy impacts the process of the research process and how to ensure commitment to this philosophy. As previously indicated, this research is founded on the constructivist philosophy. The meaning and understanding of events and experiences are constructed by the participants who develop the realities within the environment in which they participate.

From the constructivist perspective, this research intends to elicit and understand how individuals and shared meanings are constructed by the research participants about the phenomena of interest.

The constructivist paradigm will explain how the participants know and construct reality and concepts, such as self-determination, motivation, self-regulated learning, and learning and thinking styles.

Within the context of this research, each university is considered as an individual case. Even though the universities are peer institutions having many common operational characteristics, shared objectives and frequently exhibiting intersecting visions and missions, these universities endeavor to uphold considerable levels of autonomy aimed at keeping each university uniquely distinct, so that each university may claim accomplishments that outperform the others in the competition for excellence.

The case study feature is considered from the university's activity and duty through training programs towards knowledge generation, dissemination, and learning advantage.

This research is also modeled as an instrumental case study, in which specific cases are examined to provide insight into the issue. The survey questionnaires were administered to a total of 500 post-graduate university students at different universities in Egypt.

Among the participating respondents in this research, 62% (n = 310) were male and 38% (n = 190) were female.

The course performance trends of participant students were collected from the participating training programs.

Training programs in Egyptian universities are generally modeled along with the European Qualifications Framework (EQF) for teaching, learning, and assessment in higher education.

For analyses, the Invivostat software calculation was done under a robust maximum likelihood estimation for each subscale of Cronbach's Alpha and a confirmatory factor analysis (CFA) in testing each element factor structure. Each subscale's mean was calculated while checking off the bivariate correlations, and the descriptive statistics were also conducted using Invivostat.

The training program and gender differences, as well as distinguishing factors between the participant students in a single, two, and all the three training programs, were also assessed using MANOVA, as shown in Table 4.

Structural Equation Modeling was performed for the main analysis using the InVivostat software package in the hypotheses testing.

Testing was conducted with two different models with the exogenous variables that estimate need frustration and need satisfaction, the reason being that the inclusion of need frustration and satisfaction in the particular model resulted in a high correlation of $r = -0.52$ between the two variables, while yielding unpredicted associations with the endogenous variables that the correlation table did not justify.

The measurement model was first tested with the Blended e-Learning program need satisfaction and alternate need frustration, loaded on 12 satisfaction and frustration elements as a composite latent factor. Subsequently, Blended e-Learning autonomous motivation was detected using the intrinsic as well-identified and four elements of the regulations. Blended e-Learning controlled motivation through three external and introjected elements of the regulations.

Identification of Blended e-Learning academic buoyancy used two related elements, and the students' standardized grade scores served as the observed variable. Testing was then conducted on the structural models with the need satisfaction and the need frustration composite latent factor, predicting Blended e-Learning autonomous motivation as the composite latent factor.

At the same time, Blended-eLearning controlled motivation as the composite latent factor, sequentially predicting Blended e-Learning related academic buoyancy. Testing for each of the hypothesized associations was carried out by including age, gender, and training program type, along with the level of course performance as covariates. The bootstrapping method was utilized in examining the model's indirect effect significance through replication.

Multiple fit indices formed the basis for the model fit assessment with figures equivalent to or above 0.90 and 0.95, being accepted in the comparative fit index.

An acceptable model fit is reflected by non-significant chi-square with values from 0.08 and below, which are considered good in the root mean square error of approximation. Values equal to or less than 0.05 are considered a good fit for the standardized root mean square residual (Hu & Bentler, 1995), while 0.08 cut-off thresholds for SRMR are acceptable.

The robust maximum likelihood (MLM) estimation was utilized alongside the Satorra-Bentler (SB) scaling technique.

The correlations, standard deviations, and means for different latent variables of each of the training programs are presented in Table 5.

From an evaluation of the subscales of motivation, the relationship among motivation types was found to occur in a continuum-like manner across the three training programs with a strong correlation between the adjacent motivations of intrinsic motivation and identified regulation.

A weak correlation was observed in this case between the distal motivations of external regulation and intrinsic motivation. Nevertheless, the correlations between other motivation types did not fit the expected patterns for the different training programs. Correlations between intrinsic motivation and introjected regulation seemed high at 0.57 for Blended e-Learning and 0.54 for Virtual Learning, as compared to identified regulation. For all three training programs, the correlations between external regulation and introjected regulation with external regulation had a close similarity. For virtual learning and traditional face-to-face training programs, the correlations of external and identified regulations were greater than those of external and introjected regulations.

Table 5
Correlation between Motivation Types

Study Variables	Traditional Face-to-Face		Blended e-Learning		Virtual Learning	
	<i>r</i>	<i>p</i>	<i>r</i>	<i>p</i>	<i>r</i>	<i>p</i>
Intrinsic motivation	0.167	.002*	0.198	.019*	0.354	<.001*
Amotivation	0.229	.005*		.003	0.326	<.001*
Introjected Regulation	0.390	<.002*	0.208	0.002	0.298	<.001*

Note. R is the Pearson coefficient, and * represents statistically significant with $p \leq .05$.

Fundamental psychological need fulfillment concerning competence, autonomy, and relatedness based on the Self-Determination Theory was hypothesized as having a significant impact on academic identity formation.

The conceptualization is that academic identity formation consists of multiple commitment and exploratory elements. This research among higher education students in Egyptian universities investigated the associations between need satisfaction and academic identity elements, while considering its effect.

The models tested included the basic-effects need a satisfaction model, a basic-effects identity model, and an effects reciprocation model.

These need satisfaction models are examined from three training programs; Blended e-Learning, Virtual Learning, and traditional face-to-face learning programs to determine their relationships with academic identity formation.

Even though an ascendancy of routes from the need components to the identity components existed, the effects reciprocation model received the greatest substantiation. Academic identity prominence depicting multivariate identity dimension patterns had meaningful associations with need satisfaction.

Academic identity achievement obtained the greatest score for all need satisfaction indices. In this research, questions to students about different constructs and academic identity outcomes of Table 3 were used.

This modeling attempts to determine the predictors of academic identity formation about the type of training program, where academic identity comprises the factors of identity, self-efficacy, and value.

Academic identity was found to strongly predict academic integration for all students within the three training programs; Blended e-Learning, Virtual Learning, and traditional face-to-face learning. Academic integration additionally seems to be a mediator to predicting other learning outcomes that include research performance, commitment to learning activities, and school time management.

Exploration was also conducted to determine the relationship between student engagement in mind wandering, whether intentional or unintentional, type of the training program, and performance in the courses. Mind wandering rates during learning within Blended e-Learning, Virtual Learning, and traditional face-to-face learning were gauged through a questionnaire to establish self-reported measures and the student's grade-point average, motivation towards learning, and general tendency towards mind wandering. The study results found that at the training program level students encountered intentional mind

wandering with $t = 3.97$ and $p < 0.05$, while less unintentional mind wandering was $t = 1.25$ and $p < 0.17$.

At the individual training program level, regression, as well as mediation analysis, found intentional mind wandering to be more strongly associated with Virtual Learning and lower performance, as measured through self-reported performance metrics with intentional mind wandering $\beta = -0.19$, $p < 0.01$, and unintentional mind wandering $\beta = 0.09$, $p < 0.05$. On the contrary, unintentional mind wandering was more strongly associated with Blended e-Learning and traditional face-to-face programs, with intentional mind wandering $\beta = -0.01$, $p < 0.80$, while unintentional mind wandering was $\beta = -0.98$ and $p < 0.05$. Remarkably, it was observed that mind wandering was related to the performance independent of the type of the training program as a determinant of the performance.

Consequently, these results show that mind wandering within the university learning setting is related to significant performance implications. The characteristic of performance implications is dependent on both the type of training program and whether mind-wandering is intentional or unintentional.

4. Conclusion and Suggested Studies

The Self-Determination Theory highlights different motivational categories, classified by Ryan and Deci (2008) as extrinsic and intrinsic motivation.

Intrinsic motivation is the performance regarding activities for the sake of activity, meaning experiencing of interest, satisfaction, pleasure, and enjoyment inherent in an activity (Nguyen et al., 2018).

Extrinsic motivation represents a broad category of individual behaviors that are practiced not for the sake of behavior itself but as a means to a particular end. For instance, learners are cooperative in acquiring knowledge and information to obtain a better and higher reward of good grades.

Conversely, motivation means the lack of self-determination resulting from an absence of value of the activity.

Motivation is observed by Deci and Ryan (2002) to be an individual behavior of going through the motions without any intention of performing the task at hand. However, not all training programs are equally beneficial to learners in terms of enhancing proper motivation for

their success within the education environment. Therefore, the education system must decide what kinds of training programs to offer learners during their learning in order to ensure educational success.

Extrinsic motivation comprises four subtypes: external, introjected, identified, and integrated regulation.

Integrated regulation is the highest extrinsic motivation and occurs for the activities that have been incorporated fully into the self of the person engaging in such activities.

Identified regulation refers to the performance of activities by individuals in connection to their identity. In contrast, introjected regulation refers to individual behavior or action based on the need for high self-esteem and avoidance of negative feelings.

In terms of external regulation, the basis has been found to consist of external factors that include reward attainment and the need for negative feedback avoidance. The Self-Determination Theory of Motivation gained prominence of application within the educational setting. It has been used in schools, colleges, and universities to evaluate the influence of motivation on learners and instructors.

A variety of research approaches have been applied in examining the learners and instructors' capabilities that are motivated extrinsically, intrinsically, or affected by the motivation resulting from academic performance and outcomes.

Subsequently, it is seen that the Self-Determination Theory supports learners' interests within learning environments, competency enhancement, as well as improvement in performance and outcomes.

Training has been extensively applied in researching and examining the support of an advanced information technology in enhancing learners' motivation and learning outcome performance.

Nonetheless, technology use in learning could also lead to barriers in learning, such as spending excessive amounts of time in virtual activities, feelings of boredom with the outside world, compulsive behavior towards virtual learning activities, failure in online time management, irritation with a disturbance during online activities, and diminished social interaction, as well as destruction of the capability for face-to-face communication. Even so, such barriers may not be common to all individuals, since other users who benefit from technology without seeing and experiencing such barriers also exist.

Further study on intrinsic motivation can help in demonstrating how it can be applied for the optimal learners' engagement in Blended e-Learning and Virtual Learning. Intrinsic motivation has occasionally been more preferred as compared with extrinsic motivation within the academic learning context since intrinsic motivation has been associated with individual behavioral persistence.

Despite this, additional studies are still needed in order to evaluate how intrinsic motivation forms a critical element in education. Intrinsic motivation is an inherently important element of learning and achievement, which can be characterized entirely.

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