FACING MONOTONOUS (NON- DESIGN STUDIO) UNIT COURSES CHALLENGES BY UPDATED TEACHING STRATEGIES USING ARTIFICIAL INTELLIGENCE

مواجهة تحديات دورات (ما غير التصميم) الرتيبة من خلال إستراتيجيات تدريس مستحدثة بإستخدام الذكاء الاصطناع

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ABSTRACT

Artificial intelligence (AI) is said to be integrated in all fields including education. But the question is: how can we utilize (AI) positively in helping instructors with the education process especially for the unit courses whose records show a lot of challenges for being the most boring for students within the interior design program. This paper aims to reach a successful teaching strategy to non-design studio unit courses for a better student overall experience using (AI), Evaluating the current state using the analytical- comparative method through a survey conducted to analyze specific challenges facing interior design students in non-studio unit courses smoothly as well as analyzing the current state of Artificial intelligence and if it can contribute in solving those challenges, in addition to comparing the state of teaching non studio units in Egypt with others abroad to have an accurate evaluation. The paper revealed some important points, The most prominent is that (AI) is still in the beginning and its integration for usage specially in interior design programs is still very limited, a teaching strategy was selected and much more.

KEYWORDS

Artificial intelligence; Non-design studio-unit courses; Education .

الملخص

لقد أصبح للذكاء الإصطناعى أثر بجميع المجالات ضمنها التعليم، والسؤال هو.. كيف يمكننا إستخدام الذكاء الاصطناعي بشكل إيجابي في مساعدة المحاضرين في عملية التعليم للحصول على نتيجة أفضل ، خاصة لدورات غير التصميم التى يظهر بها الكثير من التحديات أثناء تدريسها وتفاعل الطلاب معها، فهى من أقل الدورات التى يتحمس لتلقيها طلاب الفنون والتصميم ضمن برنامج التصميم الداخلي ، يهدف البحث للوصول إلى إستراتيجية تدريس افضل باستخدام ادوات العصر. يستخدم البحث منهج التحليل والمقارنة من خلال استبيان تم إجراؤه لتحليل التحديات التي تواجه طلاب الفنون والتصميم لتلقي المعلومات في دورات ما غير الاستوديو بسلاسة وكذلك تحليل الوضع الحالي فيما يخص تطبيقات الذكاء الإصطناعى بالتدريس إن وجدت وما إذا كان يمكن أن يساهم في حل تلك التحديات ، بالإضافة إلى عمل مقارنة بين أساليب تدريس تلك الدورات بالتحديد داخل مصر وخارجها لتقييم أدق. ولقد خرجت الدراسه بمجموعة من النقاط الهامه،لعل أبرزها أن الذكاء الإصطناعى لا يزال فى بداياته وتطبيقاته محدوده و خاصة فى تدريس برامج العماره الداخلية ،تم إختيار إستراتيجيه ملاءمة للتدريس وغيرها الكثير .

الكلمات المفتاحية

الذكاء الإصطناعى ؛ دورات ما غير التصميم ؛ التعليم.

1.INTRODUCTION

Interior Design students' performance within different program unit courses is not much concentrated on, neither has it ever received any attention from researchers though it is a clear phenomenon that students' performance and interest toward non-design studio unit courses is not the same as their interest toward design studio unit courses which is further proved through a clear question within a survey conducted by the researcher that asked a group of students which type of unit course do they usually obtain their highest marks at and the answer with a majority of 58.3% was to design studio unit courses (fig 1) (Researcher 2021), and here comes the question what is the real reason for interior design students getting their highest grades in design studios in specific? Do they face any type of struggle in receiving information related to non-studio related unit courses in general? Or is it just a personal preference? Is interior design student's performance almost similar in any other unit course that is not considered design studio? What are the current methods of teaching non-design studio type of unit courses? Are they effective methods? Has the new teaching method that appeared due to the pandemic had an impact? Can Artificial intelligence be a helping method in teaching those types of unit courses? This paper will try to answer those questions and much more….

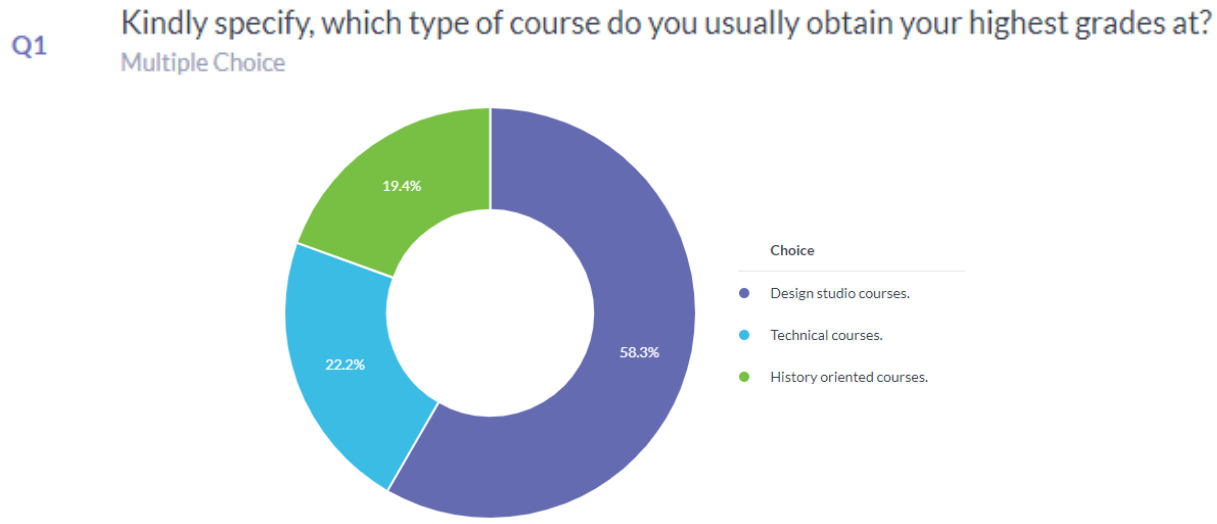

Figure 1, A screen shot of students' answer (Source: Author's Survey, 2021)

1.1. Research Problem

A certain disinterest from interior design department students towards non- design studio unit courses in general is clearly reflected in their grades in those units in specific, with unclear reasons for that phenomenon (Researcher 2021). There is also a lack of continuing evaluation to find out the main reasons of such singularity. In addition to that, no clear strategies were set and tested on how to teach those type of unit courses in specific to obtain better overall results.

Outdated methods of teaching non-design unit courses that clearly have its flows reflected on students' performance, despite the availability of other tools that can align those unit courses with the world's future vision towards digital transformation and artificial intelligence being no doubt the future tomorrow.

1.2. Researcher Hypothesis

There is a real problem regarding students' performance and attitude in general toward non-design studio unit courses, a level of disengagement is always noticed, and Artificial Intelligence (AI) can be a real solution to some of those struggles.
Ineffective teaching strategy is practiced within the teaching of those unit courses.

1.3. Research Aim

To prove or decline the research hypothesis and to find the real reasons behind the interior design student attitude toward non-design unit courses (if proven right).

To draw attention to the need of developing new teaching methods to keep pace with the world future vision toward digital transformation and utilize it to improve the currently practiced teaching methods.

1.4. Research Importance

Evaluate the current teaching methods of non-design studio unit courses within interior design programs and compare it to others, globally for an accurate evaluation.

Test if there are common factors between different non-studio design unit courses and students' performance and attitude toward them.

Explore if the new teaching modes that appeared due to pandemic had an impact (positive or negative) toward teaching those type of unit courses in specific.

Explore Artificial Intelligence impact on teaching non-design studio unit courses and test if it can have a positive impact on the educational process as a part of updating the outdated available teaching methods.

1.5. Research Methodology

The research will be using the analytical – comparative method, by analyzing the results of a survey designed by the researcher and distributed among a group of interior design students from different levels to test the research hypothesis as well as knowing more about the struggles facing students in non-design studio units (if hypothesis proven right).

The comparative method through comparing the teaching methods of those type of unit courses nationally and globally for an accurate evaluation as well, in addition to analyzing available (AI) experiments nationally and internationally (if found), as a suggested tool for teaching those unit courses as a part of testing the research hypothesis.

1.6. Research Objectives

Confirm or deny the research hypothesis on the availability of a real problem regarding students' performance toward non-design unit courses.
Try to reach the main challenges students usually face in those type of unit courses.
Evaluate the current practiced teaching style for those type of unit courses and its impact, then compare it with other teaching strategies (if available) internationally.
Test Artificial Intelligence as a tool to teach those unit courses in specific, being the sure future.

Achieve an optimal strategy for teaching non-design unit courses for the best experience to interior design students utilizing current and future available tools (AI) if proven sufficient.

1.7. Research Limitations

The survey used in this paper is conducted on a number of students from only one university, though the results would definitely help in getting some conclusion and insight, it is still suggested to be applied on a larger scale.

1. 8. Paper Structure

The paper is divided into six main sections (excluding references) as follow:

Table 1, Paper structure (Researcher, 2021)

Section number and title	Section content
2. Analyzing Interior design students' opinions on non-design studio unit courses.	This section will focus on analyzing the results of the survey conducted by the researcher and get some conclusions about interior design student and their attitude toward non-design studio unit courses.
3. Evaluating the current teaching methods(strategies) of non-design studio unit courses. (Nationally and internationally).	This section will apply the comparative methodology to try and get an accurate evaluation of the current teaching methods of non- design studio unit courses in our faculties through comparing with other experiences internationally and if there are any experiences of positive impact that we can apply and benefit from.
4. Artificial intelligence in interior design program education (past – present –future).	This section will Explore Artificial intelligence, its current implementations in the education field in general and in interior design program in specific (if found any) .
5.Conclusion	
6. Recommendations and future research.	

2. ANALYZING INTERIOR DESIGN STUDENTS' OPINIONS ON NON-DESIGN STUDIO UNIT COURSES.

Interior design program in general consists of a number of unit courses distributed along the program throughout the years. In each semester there are different types of unit courses than can be classified as follow:

Table 2, Type of interior design unit courses (Researcher, 2021)

interior design unit course classification	Design studio unit courses	Non-Design studio unit courses	
		Technical unit courses	History related unit courses
Unit course description	The core unit course of interior design program, taught in different levels.	Unit courses that improve student technical skills and info (e.g. : Working drawings / teaching soft - wares ..etc).	Mainly theoretical unit courses related to history and styles.

This study will focus on students' performance toward non design unit courses with its two sub types (technical, historical) related. A survey was conducted on a group of interior design students from different levels. The survey consisted of 26 questions which focus on three main directions.

First

The first section of questions focused on trying to explore which type of unit courses interior design students usually get the highest marks at, the reason why do they get a high mark in a certain type and if they get lower grades in historic and technical unit courses what are the reasons?

Second

The Second section of questions focused on trying to know the type of struggle students face in general in dealing with non-design studio courses / if there is a link or common factors for both technical and history related unit courses, if they feel unenthusiastic about those type of courses (testing a part of the hypothesis) and if the mode of teaching or any other factors do have an impact on their experience in general.

Third

The last section of questions focused on testing student knowledge about AR/VR technology and if they are welcoming about using such a technology in teaching those type of unit courses.
The questions for first section were formatted as follow:

Table 3, First section in survey questions (Researcher, 2021)

Survey Questions	Multiple choices offered
Q1: Kindly specify, which type of course do you usually obtain your highest grades at?	●Design studio courses. ●Technical courses. ●History oriented courses.
Q2: Choose the reason you always get a high mark in a certain type of unit course	●Personal preference (you enjoy this type of unit courses). ●you feel motivated due to personal reasons. ●you feel motivated due to the instructor way of delivering. ●other
Q3: Do you in general get low grades in history related subjects ?	● Yes. ● No
Q4: If you always get low grades in history related subjects , kindly choose the most prominent reason **(only one)**	**A.** Personally related (E.G: you don't like those type of courses). **Be**ing un motivated for personal reasons. **C.** Being unmotivated due to instructor way of delivering. **D.** you don't know its importance for your major.
Q5: Do you always get lower grades in any theoretical unit courses in general and not only in history related units than design studio unit courses ?…if you have any specific note , kindly clarify below.	● Yes. ● No
Q6: Do you in general get low grades in technical related subjects ?	● Yes. ● No
Q7:if you always get low grades in technical related subjects , kindly state the most accurate reason . (only one)	**A.** Personally related (E.G: you don't like those type of courses). **Be**ing un motivated for personal reasons. **C.** Being unmotivated due to instructor way of delivering. **D.** you don't know its importance for your major.

The number of students who answered the survey in general were 72 students from different levels. By analyzing the results, some amazing outcomes were reached as follow (Researcher, 2021):

Usually, interior design students get their highest grades in Design Studio unit courses with a percentage of 58.3% with the second position to technical unit courses with a percentage of 22.2% and the last position to history-oriented subjects with a percentage of 19.4% (hypothesis proved) (Fig 1 page 2).

The reason they get the highest mark in a certain type of unit course is mainly personal preference majorly with a percentage of 55.6%, and instructor way of delivering with a percentage of 30.6% (fig.2, p.6).

Students who constantly get low grades in history-oriented unit courses are a percentage of 19.4% and though it is not the majority it is still a great percentage, and the reason is mainly related to motivation and instructor way of delivering with a percentage of 24.1% (fig3, 4).

Regarding if students constantly get lower marks in theoretical unit courses in general and not history related ones, the majority answered with a no with a percentage of 66.7% and from this it can be concluded that interior design students have no issues with studying theoretical unit courses in general but the problem is mostly is with the way of delivering same with technical unit courses as per the results of question 6 and 7 (Fig 6,7 p.7)

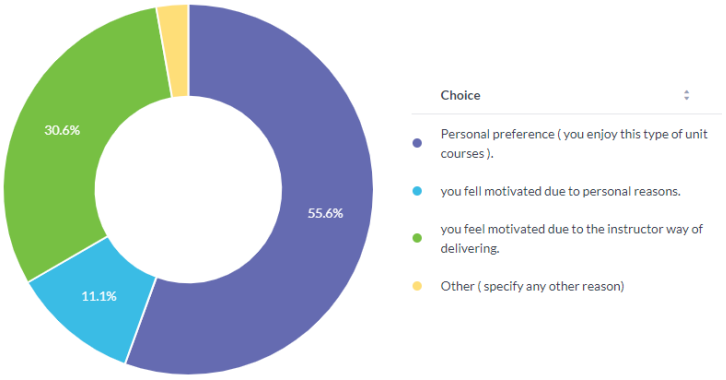

Figure 2, students' answer to Q2 (Source: Author, 2021)

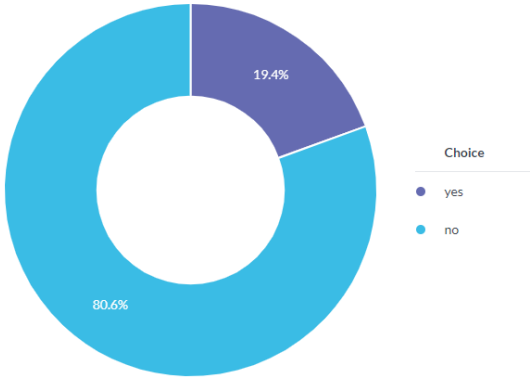

Figure 3, students' answer to Q3 (Source: Author, 2021)

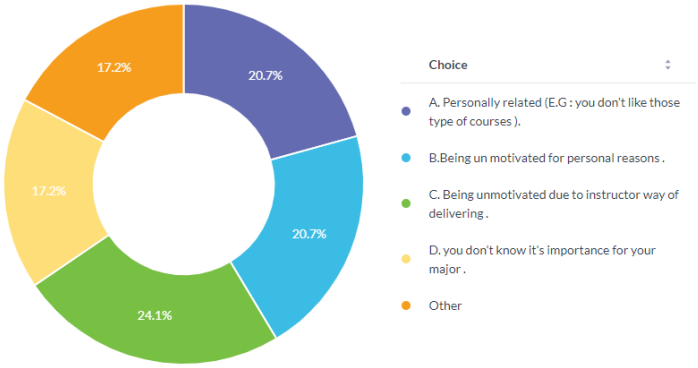

Figure 4, students' answer to Q4 (Source: Author, 2021)

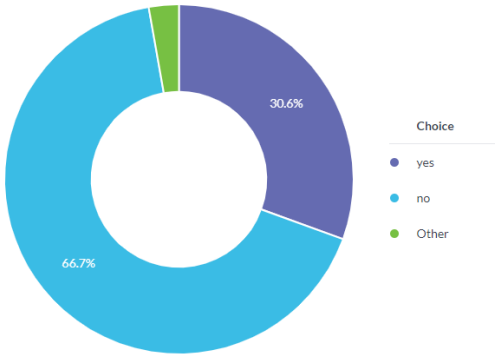

Figure 5, students' answer to Q5(Source: Author, 2021)

Based on the above, it can be concluded that the main problem is students' engagement which can be directly linked to an ineffective dis-engaging teaching strategy (half hypothesis proved)

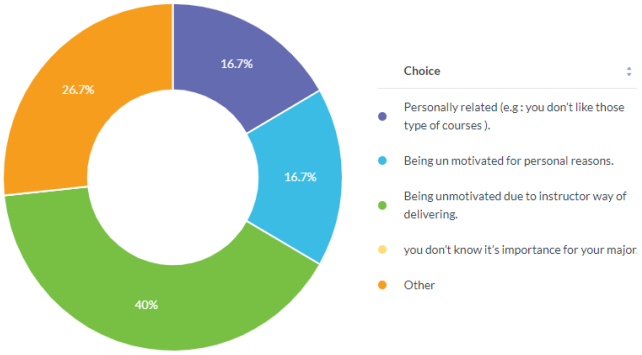

Figure 6, students' answer to Q6(Source: Author, 2021)

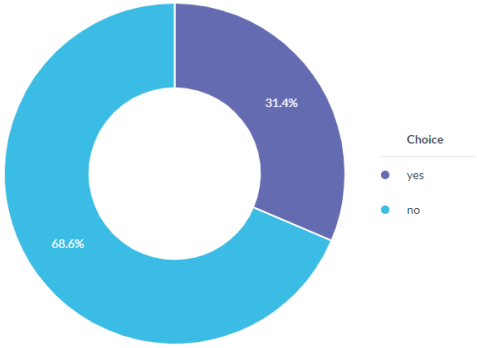

Figure 7 students' answer to Q7(Source: Author, 2021)

Table 4, Second section in survey questions (Author, 2021)

Survey Questions	Answers
Q8: Do you usually face any struggles in history related courses?	● Yes. ● No
Q9: if your answer was yes in the previous question. Kindly specify the most 3 important factors causing it.	Left to respondent
Q10: Do you usually face any struggles in technical related courses?	● Yes. ● No
Q11: if your answer was yes in the previous question. Kindly specify the most 3 important factors causing it.	Left to respondent
Q12: Do you feel there are common factors affecting your performance in history related courses and technical courses?	● Yes. ● No
Q13: if you see there are common factors for you/ affecting your performance in history related courses and technical courses, Kindly state the most 3 challenges that you find common in both.	Left to respondent
Q14: If you feel (un -enthusiastic) about history / technical unit courses, the most accurate reason can be …	●Not valuing /knowing the importance of this unit course to you after graduating. ●instructor way of delivering in general. ● Other
Q15: Does the mode of delivering the course (Distant / hybrid) affect your level of enthusiasm for both history / technical courses?	● Yes. ● No
Q16: For you …history and theoretical unit courses better delivered how?	●Distant. ●Hybrid. ●on Campus. ●other.
Q17: For you. Technical unit courses better delivered how?	●Distant. ●Hybrid. ●on Campus. ●other.
Q18: For history oriented courses, what is your favorite way of receiving info to better understand it?	●PDFS and text in general. ●Only videos are enough. ● Field trips and real experiences. ● Other.
Q19: For technical oriented courses, what is your favorite way of receiving info to better understand it?	●PDFS and text in general. ●Only videos are enough. ● Field trips and real experiences. ● Other.

By analyzing the results, some out comes were reached as follow (Researcher, 2021):

●A percentage of 38.9% do face struggles while studying history-oriented unit courses (Fig.8, p.8) and though it is not the majority, it is still a very high percentage that shows there are still some struggles facing interior design students and by scanning students' answers, it is concluded that the students' struggles are confined between not being able to deal with a large number of information and instructor's way of delivering whom they named as boring.

● by Analyzing the percentage of students having struggles with technical unit courses, it is evident that it is almost the same percentage as historic unit courses with almost a percentage of 37.1% and the struggles are related to the amount of information and instructor way of delivering as well as number of assignments (Fig.9).

● When asking students in a direct way if they find common factors affecting their performance in both history related and technical unit courses, 25.7% percent find that there are common factors, the most prominent one was the time and number of tasks required and not feeling taken care after by instructors (Fig.10).

● Reasons of lack of enthusiasm toward both history related and technical unit courses is mostly due to instructor way of delivering with a percentage of 75.8% (Fig.11)

● Method of delivering did surely have an impact and by the spread of covid 19 for almost 3 years now, some teaching modes were forced to use (e.g.: Complete distant learning then hybrid method with different implementation ways). Those methods were definitely not the best method to teaching those unit courses. In fact, surprisingly, Students found that both unit courses are better being delivered on campus with a percentage of 52.8% for history-oriented unit courses and 75% for technical unit courses (Fig 13, 14 p.9).

● When asked about the best way of receiving info for history related unit courses the highest percentage was to fieldtrips and real experiences with a percentage of 75%.

●Both field trips as well as pdf with very near percentages are considered a must for technical unit courses with a percentage of 37.1% and 34.3% respectively (Fig 15, 16 p.9).

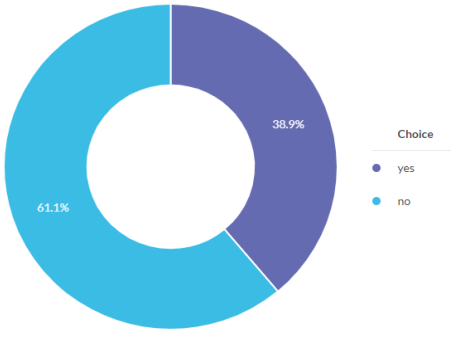

Figure 8 students' answer to Q8(Source: Author, 2021)

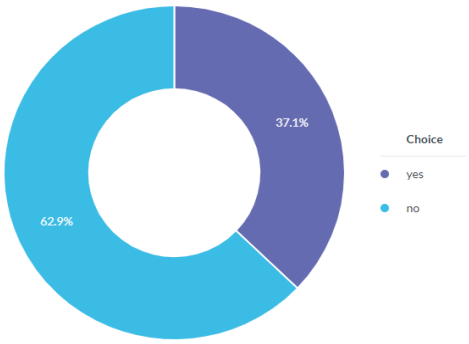

Figure 9students' answer to Q10(Source: Author, 2021)

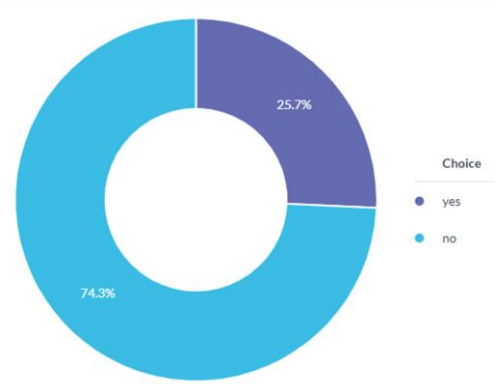

Figure 10 students' answer to Q12(Source: Author, 2021)

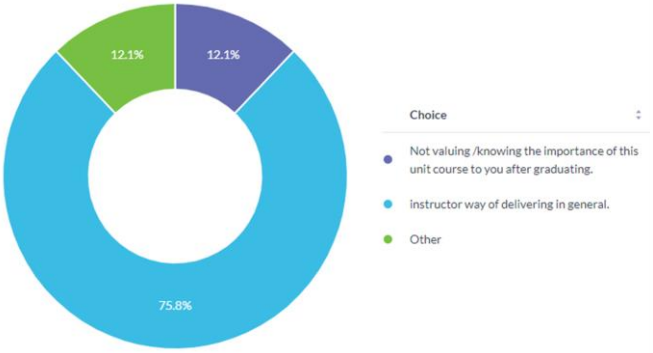

Figure 11 students' answer to Q14(Source: Author, 2021)

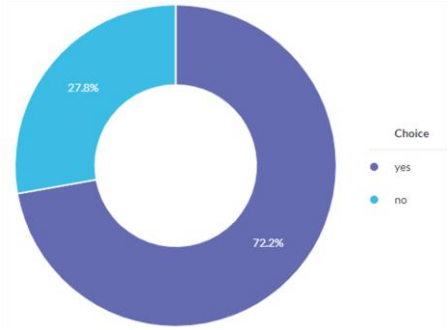

Figure 12 students' answer to Q15(Source: Author, 2021)

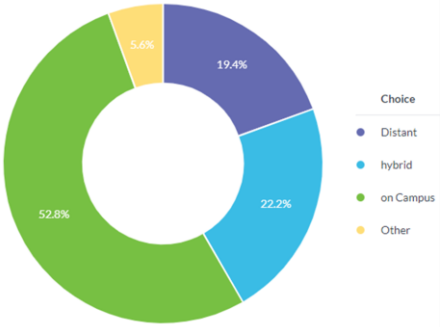

Figure 13 students' answer to Q16(Source: Author, 2021)

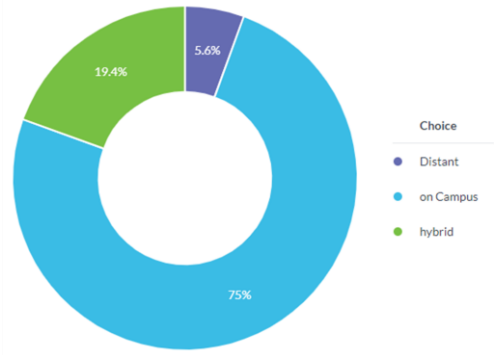

Figure 14 students' answer to Q17(Source: Author, 2021)

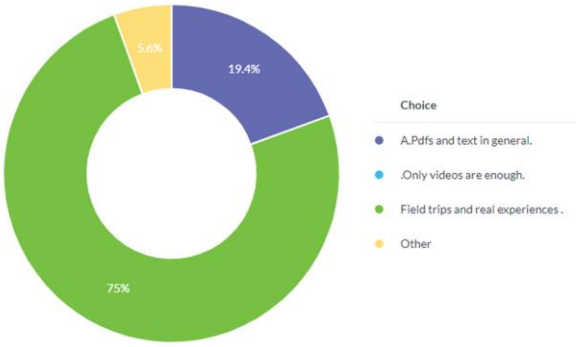

Figure 15 students' answer to Q18(Source: Author, 2021)

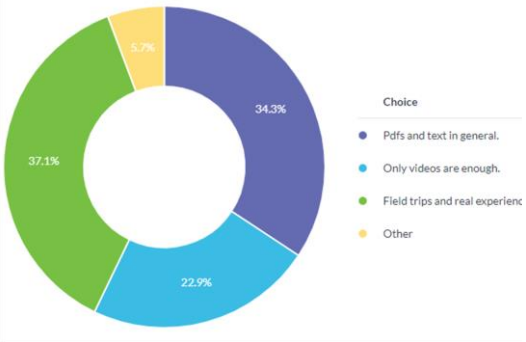

Figure 16 students' answer to Q19(Source: Author, 2021)

Table 5, Third section in survey questions (Researcher, 2021)

Survey Questions	Multiple choices offered
Q20: Have you heard about Virtual reality (VR) technology?	● Yes. ● No
Q21: Do you know the difference between AR (Augmented reality) and VR (virtual reality) technology?	● Yes. ● No.
Q22:if you have heard about virtual reality - Would you encourage using Virtual reality technique in teaching non studio unit courses?	● Yes. ● No.
Q23: In your point of view which type of non-studio courses can VR help in improving the most?	●Technical courses. ●History oriented courses. ●Other
Q24: Kindly give us a suggestion on how do you recommend using this technology in improving your experience in delivering those type of unit courses.	Left to respondent

By analyzing the results of this section, it was clear that most of the students have heard about VR technology with a percentage of 86.1% (Fig.17), while them knowing the difference between VR and AR technology is questionable with a percentage of 50%:50% (Fig.18). The majority have shown interest in trying this technology in teaching non-design studio unit courses with a percentage of 78.8% (Fig.19) and the majority have agreed that it would be a great option specially in history-oriented unit courses with a percentage of 57.1%(Fig.20) and their suggestion was to use it in-depth walkthrough of some historic events as they can re-live the events and get engaged

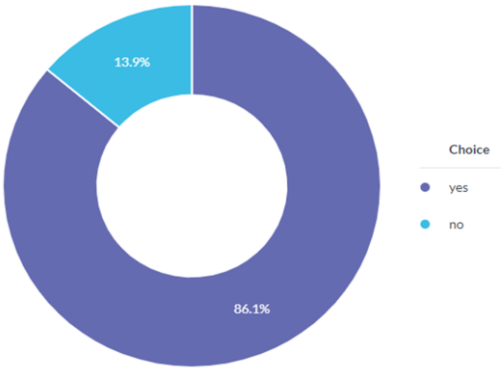

Figure 17 students' answer to Q20(Source: Author, 2021)

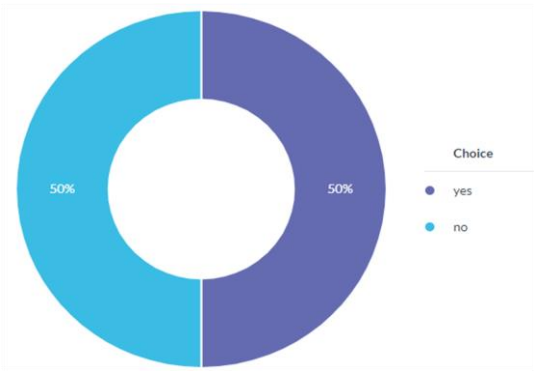

Figure 18 students' answer to Q21(Source: Author, 2021)

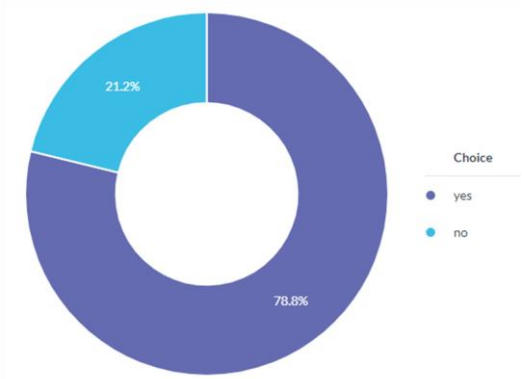

Figure 19 students' answer to Q22(Source: Author, 2021)

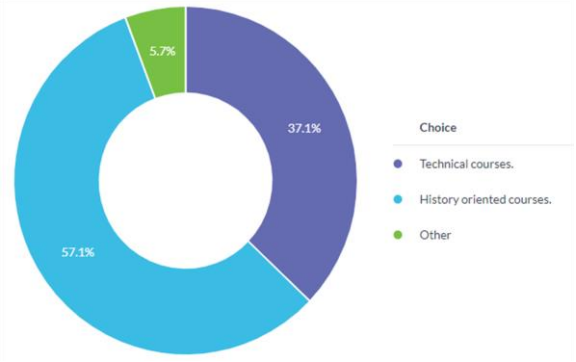

Figure 20 students' answer to Q23(Source: Author, 2021)

3. EVALUATING THE CURRENT TEACHING METHODS OF NON-DESIGN STUDIO UNIT COURSES. (NATIONALLY AND INTERNATIONALLY).

As per students' answers with in the survey, it's evident that the highest challenge students' face is lack of enthusiasm due to way of delivering. Accordingly, an evaluation to way of delivering to those types of unit courses will take place by analyzing the current implementations and compare it with other case studies outside Egypt to find solutions and better ways of delivering/ new teaching strategies.

3.1. Nationally (Inside Egypt)

In faculties related to design inside Egypt , non-studio related unit courses specially are mostly face –to face lectures , where content is delivered with a certain reference to students to study from and at the end of the unit course, the exam tests student's capability in memorizing the already given info through testing students' knowledge about different art movements through easy questions /recognizing pics in regard to history oriented unit courses or testing the technical info received in technical oriented unit courses regardless of their specific type, though after the pandemic in 2019, those unit courses were forced to be delivered fully online and lately partially online with a number of new challenges facing instructors including using technology , interacting directly with students and other factors that further affected the education process due to the surprise element of the pandemic and all involved not being prepared to it (Researcher,2021).

3.2. Internationally (Outside Egypt)

In regard to non-design unit courses, there is almost no difference in the way of delivering especially in history-oriented unit courses. Studies have shown that most History instructors are tied to using the traditional mode of delivery, with little or no innovation throughout the years (Adeyinka, 1989, 1990; Oppong, 2009; Boadu et al., 2014) and Text books have been considered as the main teaching material in higher education in history education in majority of Europe until the 2000s (Stradling, 2003). Regarding other technical unit courses, it is almost the same thing, yet this doesn't cancel that there are anon-generalized individual or institutional endeavors ,trying to use new technologies in teaching some non-design unit courses in nature (not in Art and design faculties in specific anyway). A case study done in A Turkish university in the year 2018(to test students' review on using the virtual reality technology in teaching history) was tested and the responses were definitely positive (Gürkan, Mehmet, 2018), yet this cannot be considered a real permanent implementation of the technology / static teaching Strategy for those type of unit courses in general (Researcher 2021).

4.ARTIFICIAL INTELLIGENCE IN INTERIOR DESIGN PROGRAM EDUCATION (PAST – PRESENT –FUTURE).

4.1. Artificial Intelligence in The Educational Field

It's worth mentioning that Artificial intelligence (AI) is not a new science at all. It goes back to 1955 when John Carthy defined the term as the capability to perform a variety of human cognitive tasks such as communicating, reasoning learning and problem solving (Nilson, 1998) and since then Artificial intelligence in general have experienced peaks and recessions due to difficulties around a real application then. Yet, there is no doubt that recently Artificial intelligence has been the field of interest again and its application in different fields was the main focus of pioneers in

all disciplines .The year 2011 was the breakthrough in the research field related to Artificial intelligence which all started and reached its peak in 2019 (Raffaele Cioffi, et2020).
Regarding Artificial intelligence in the education field in specific, AI innovation in education has evolved from idealized laboratory scenarios to real-life learning contexts with more complexity throughout the years). Artificial intelligence has been widely used as an aiding tool in the teaching process in general. Companies related to educational technology have developed aided Teaching System that assists classroom environment management, grading, evaluation and second-language program ...etc . (Chong Guan, Jian Mou , Zhiying Jiang,et 2020) and have been used for the longest time already now with the largest investments that reached $1047 billion in 2019 (Mou,2019), and Though the huge amount of investments , the type (level) of artificial intelligence used is still in the weak stage as most of the current applications are based on human interference and human feeding those machines with massive data to perform different tasks (Researcher 2021) .
In this regard, it's worth mentioning that levels of Artificial intelligence (AI) in general can be classified as follow:

Table 6, Levels of Artificial intelligence (Researcher, 2021)

Low level of AI	**Intermediate level of AI**	**High level of AI**
In this stage machine is taught to react a certain way for a certain input.	In this stage, machine can deal with semi supervised data as per some previous labeled data, but can act with more type of complex data and preform more complex type of tasks	This is the highest level of artificial intelligence where the machine can almost perform separately, learn by the trial – error concept all by it-self and take decisions almost alone.
Examples for real implementation in the educational field		
Automatic correction to final exams	Forecasting a certain an unknown according to some previously input data.(e.g : Forecasting students' performance and grades based on their previous records..etc).	Virtual reality technology, Augmented reality technology.

Based on this, it is certain, that majority of the current applications of artificial intelligence in the educational field range between the low and intermediate level of Artificial intelligence mostly, yet this does not eliminate that there are uses for stronger types of Artificial intelligence in the educational field as well. For instance, there have been actual implementations for virtual reality technology for a very long time now, it can be tracked back to 1989 (Pantelidis, 2010). Research in the use of virtual reality and Augmented reality in Art education in specific have reached its peak in the last few years especially from the year 2017 to the year 2019 (Mariana, Emilio,2020). But the question is, Are there any real implementations of this technology within the interior design program in specific and non-studio unit courses in specific?

4.2 Artificial Intelligence in Non-Studio Unit Courses

By scanning VR technology as well as AR technology implementations in the education field (as examples of high-level AI), it's worth mentioning that most of the actual implementations are in other fields and not in interior design program in specific. Using the AR technology (augmented reality) in tourism education for instance has been put up with in a paper published in 2014, based on a project created by European research project I Tacitus that explored ways of using augmented reality to provide compelling experiences for historic sites. (Jiri, Pavla,2014). And though it's a

trial / proposal not related to our major, tourism education has in common with art education art history unit courses, so why can't we take it as an inspiration?

On the other hand, all studies related to virtual reality implementation as well as Augmented reality technology in interior design major in specific are mostly focused on its application to help in the designing process itself through some applications that can be considered a certain degree of Artificial intelligence and the examples are various. For instance, Wang invented an application that allowed students to investigate specific buildings and their various systems with additional information using a phone or tablet (Elif Gürçınar, Özge Ceylan Esen ,2018).Another case study was shown in a paper published in the year 2019 , discussing the implementation of Mobile augmented reality in teaching design studios , by letting students imagine plans in 3d while planning it through a mobile application which will definitely help them imagine in a better way while planning and take the right decision (Fig.21)

Figure 21, *AR-based simulation of 2D interior design layout plans and integrating 3d item (Source:* Yuh, Kuo,et, *2019)*

Other Several papers as well discussed the importance of several soft -wares (Autodesk soft wares) in the design education world, considering it a certain implementation of Artificial intelligence in the field as it helps in visualizing virtual environments (Researcher2021).

Some other papers discussed, the idea of virtual museums in education practice as a part of experimental learning approach through applying virtual reality technology in specific in different learning levels, not in higher education only (Researcher 2021). To conclude, implementations of Artificial intelligence in interior design programs can be summarized as follow:

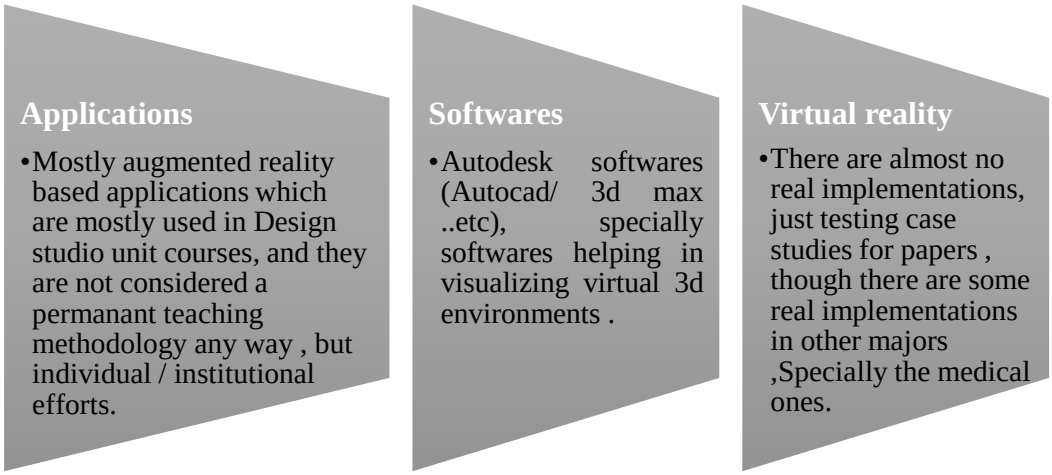

Figure 22, Current ways of (AI) implementations in interior design programs (Source: Researcher2021)

By concluding the outcomes, the question is: Why aren't some of the most popular high leveled artificial intelligence implementations (e.g.: AR/VR technology) not used till now, though its positive impact in the educational process has been explored in many papers and talked about for the longest time now? And why even the simpler type of AI implementations through augmented reality applications not used as a permanent teaching methodology, especially for non-design studio unit courses? Those questions have been kept unanswered for the longest time now. If we assume that virtual reality can have many challenges to be used as it will need a full environment and specific tools to be implemented on campus in faculties (Researcher 2021). So why not to use at least some mobile applications that can help in the educational process and make boring unit courses (from student's point of view) more interesting and engaging.

The pandemic and the current situation should have of been an alarm bell for always having the capability to deliver a course fully online without it affecting students' learning outcomes and general impression about the course. There is a very limited research and published scholarship on pedagogical aspects of online instructional design in history-oriented unit courses (Donahue-Wallace, 2008) and technical unit courses even more (Researcher 2021), though a lot of Art and design students globally encouraged the distant learning method, clarifying that it provides equal opportunities for all students regardless of their specific case (Dilmaç, Sehran,2020).

5. CONCLUSION (Researcher, 2021)

After analyzing interior design Student's feedback on non-design unit courses, analyzing the current teaching methodology for those type of unit courses, nationally and comparing it with international case studies and Artificial intelligence implementations in interior design program in specific, it is evident that:

Interior design students have no issues being taught non-design unit courses, but instructor delivering mode, as well as the amount of data delivered turn students off for both technical and history-oriented unit courses. (Common type of struggles between history oriented and technical unit courses were found).

There are no huge differences in way of delivering non design unit courses both nationally and internationally and application of Artificial intelligence in the teaching process is still in the very beginning, with the weak type of (AI) being implemented.

The impact of some high-level Artificial intelligence implementations (e.g.: AR/VR technology) has been around for the longest time, its positive impact has been proved (second half of hypothesis proved), yet

there are no real implementations especially in non –design unit courses. All the available cases are Personal and institutional efforts, but not a permanent teaching mode.

Real life experiences are important. The current pandemic (Covid-19) has imposed on us new modes of teaching that were not necessarily effective in all type of unit courses and students always preferred a degree of interaction that we completely lost throughout the pandemic and did affect delivering most of the unit courses negatively. They are not important for History oriented unit courses only but technical ones as well.

There are mixed opinions about mode of delivering Art and design unit courses in general, some global students, found that distant learning has many pros (e.g. : providing equal opportunities to all students) while the survey results showed that students preferred a certain level of interaction for all unit courses , especially in technical related unit courses. In this case, finding a more exciting and interesting way of teaching online and using technologies for virtual interaction, can impact the acceptance level for distant learning mode.

►All in all, hypothesis proved (students' disengagement as well as ineffective teaching strategy).

6. RECOMMENDATIONS AND FUTURE RESEARCH

6.1 Recommendations

It is time to put Artificial intelligence different tools into real practice. Using high level Artificial intelligence (e.g.: AR/VR technology) has to be a permanent strategy in teaching non design unit courses , by immersing it as a tool to deliver at least a part of the information (be it , through the lecture time or though formative or summative assignments . Diversity in Way of delivering is the real key to keep students engaged.

Using (AI) could help especially during the pandemic or any possible future conditions for a better learning experience (even if the unit courses were converted fully online). Some field trips like visiting museums, factories, could be virtually implemented and that would positively reflect on students' feedback. (We should always be ready for new challenges) and use technology to our side for better experiences, especially that the survey proved students' preference to a certain level of contact and interaction which was completely not available while delivering full courses on line especially for the technical courses (Research ,2021).

A clear methodology for (AI) ways of implementation in non-design unit courses should be further deeply investigated and specified for each unit course (of this type) separately.

Knowledge-mapping analysis and Cite Space can be used as a methodology for tracking new real implementations in the new future.

6.2 Suggested Teaching Strategy to Non-Design Unit Courses

As per the paper results, the suggested teaching strategy for non-design unit courses in general can be simply "Gamification", be it through (AI) based applications or other methods during the lecture time itself as well as tutorials to increase the engagement quote in an affordable way that can be urgently applied without specific preparations (as a quick easily implemented strategy) while start preparing to implement high level of Artificial intelligence through real immersive environments.

6.3 Future Research

Further investigations should be implemented on non-design unit courses and students' attitude toward them by applying the survey on an even larger number of students from different institutions for more accurate results.

Actual implementations and experiments using Artificial intelligence as a tool should take over in different no design unit courses.

Testing the gamification approach using AI tools and its impact on delivering non-design studio unit courses as a permanent teaching strategy for those types of unit courses.

7. REFERENCES

Adeyinka, A. A. (1989). Current problems of history teaching in some Nigerian senior secondary schools. Ilorin Journal of Education, 9(6), 55-63.

Boadu, G., Awuah, M. Ababio, A. M. & Eduaquah, S. (2014). An examination of the use of technology in the teaching of history: A study of selected senior high schools in the Cape Coast metropolis, Ghana. International Journal of Learning, Teaching and Educational Research, 8(1), 187-214

Chong Guan, Jian Mou , Zhiying Jiang,et (2020) , "Artificial intelligence innovation in education: A twenty-year data-driven historical analysis" - International Journal of Innovation Studies 4 (2020) 134e147. Retrieved from : https://www.sciencedirect.com/science/article/pii/S2096248720300369.

Dilmaç, Sehran (2020) "Students' Opinions about the Distance Education to Art and Design Courses in the Pandemic Process"- World Journal of Education, v10 n3 p113-126 . Retrieved from: https://eric.ed.gov/?id=EJ1265350

Donahue-Wallace, K. (2008). 'A Tale of Two Courses: Instructor-Driven and Student-Centered Approaches to Online Art History Instruction.' In: Teaching Art History With New Technologies: Reflections and Case Studies, 109-119. Newcastle, UK: Cambridge Scholars Publishing.

Elif Gürçınar, Özge Ceylan Esen (2018) "The Application of Augmented Reality in Interior Design Education - DS 91: Proceedings of NordDesign, Linköping, Sweden, 14th - 17th August 2018. Retrieved from: https://cognitive.designsociety.org/publication/40889/The+Application+of+Augmented+Reality+in+Interior+Design+Education.

Gürkan, Mehmet(2018) "Analysis of Use of Virtual Reality Technologies in History Education: A Case Study" - Asian Journal of Education and Training- Vol. 4, No. 2, 62-69-Retrived from:
https://www.researchgate.net/publication/323186566_Analysis_of_Use_of_Virtual_Reality_Technologies_in_History_Education_A_Case_Study.

Jiri, Pavla(2014), "Using Augmented Reality as a Medium for Teaching History and Tourism"- Procedia - Social and Behavioral Sciences- Volume 174, 12 February 2015, Pages 926-931. Retrieved from: https://www.sciencedirect.com/science/article/pii/S1877042815007648

Mou, X. (2019). Artificial intelligence: investment trends and selected industry uses. https://www.ifc.org/wps/wcm/connect/7898d957-69b5-4727-9226-277e8ae28711/EMCompass-Note-71-AI-Investment-Trends.pdf?MOD¼AJPERES&CVID¼mR5Jvd6.

Nilsson, N. J. (1998). Artificial Intelligence: A New Synthesis. San Francisco: Morgan Kaufmann Publishers, Inc.

Oppong, C. A. (2009). An evaluation of the teaching and learning of history in senior high schools in the Central Region of Ghana. Unpublished M.Phil. Thesis: University of Cape Coast, Ghana.

Pantelidis, V.S.(2010). Reasons to use virtual reality in education and training courses and a model to determine when to use virtual reality. Themes in Science and Technology Education, 2(1-2): 59-70.

Raffaele Cioffi , Marta Travaglioni,et(2020) "Artificial Intelligence and Machine Learning Applications in Smart Production: Progress, Trends, and Directions"-Sustainability-vol 12-p.6.retrived from : https://www.researchgate.net/publication/338482477_Artificial_Intelligence_and_Machine_Learning_Applications_in_Smart_Production_Progress_Trends_and_Directions.

Stradling, R.(2003) -20th century European history should be taught how (Cev.ayf Ünal). Istanbul: Turkey Economic and Social History Foundation Publication.