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From the Net Generation to the Netflix Generation: The E-movie Learning Concept

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Abstract: The past few years have seen considerable research on two complementary, overlapping and mutually reinforcing trends. One has been the emergence and rapid development of Web 2.0, in particular as regards the Virtual Learning Environment (also known as LMS). Online tools have gradually been integrated into the classroom-teaching environment for a variety of reasons, including teaching effectiveness, cost savings, and student engagement.

The other research track has focused more specifically on the impact that Millennials have had on teaching philosophies and principles. Such studies have underscored the role and importance of active, experiential learning for this group of students where information is presented virtually and visually. Today "reading" and "memorizing" can be seen as being supplanted by "viewing", "gaming", and "applying".

As this article will suggest, the Net Generation should perhaps be redefined as the Netflix Generation. Streaming technologies have created an entirely new viewer experience, of which Netflix is the pre-eminent example.

One global educational institution, the INSEEC Group based in France, taking inspiration from this trend, has invested in creating a new form of teaching methodology called E-Movie learning, based on the principles of a streaming series, complete with professional actors and an engaging storyline. Gaming features, social interaction as well as immediate feedbacks are integral aspects to the series. Entitled "Luxury is You" (Le Luxe, C'est Vous), this e-movie learning approach aims to replace, or complement, a Luxury Services Management course.

The aim of the current research is twofold: firstly, to assess the levels of student engagement and learning outcomes consequent to the inclusion of a specially produced series. A corollary aim is to see the differences, if any, in engagement and outcome when the series is an integral part of an Instructor-led classroom or, rather, a standalone and self-paced study tool.

The results compile three years of operation, analyzing data extracted from the scormed packages, and completed by a questionnaire sent to the students.

Key words: online learning, generation Z, student engagement

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1. Introduction

The past few years have seen considerable research on two complementary, overlapping and mutually reinforcing trends. One has been the emergence and rapid development of Web 2.0, in particular as regards the Virtual Learning Environment. The plethora of such Web-based platforms—Canvas, Blackboard, etc.—are testament to the gradual yet inevitable integration of online tools into the classroom teaching environment. Much of this research has tried to assess the efficacy and success of these tools across a series of different scenarios and in particular as regards student engagement and learning outcomes. As shall be discussed in this paper, the results are still inconclusive, although a blended approach appears to hold the most promise (Marsh J. & P. Drexler, 2001; Means B., Toyama Y., Murphy R., Bakia M. & Jones K., 2010).

The other research track has focused more specifically on the impact that Millennials, also referred to as Generations Y and Z, as well as notably, the "Net" generation (as they have grown up in the digital world, relying on the Internet for entertainment, information, and socialization), have had on teaching philosophies and principles (Deeter-Schmelz D., 2014). Such studies have underscored the role and importance of active, experiential learning for this group of students.

This has been explained by some researchers as owing to the fact that this population has grown up not only in a digital, online world, but also one in which information is presented virtually and visually, in which "reading" and "memorizing" can be seen as being supplanted by "viewing", "gaming", and "experiencing" (Pelton L. E. & True S. L., 2004; Worley K., 2011). For educators, the implications of this trend are widespread and significant. The longstanding "sage on a stage" and "chalk and talk" classroom models will need to be rethought if educators are to maintain students' engagement and positive learning outcomes, and a wide variety of interactive, audiovisual, experiential and gaming features will need to be integrated into curricula and pedagogical methodologies (Phillips C. & Trainor J., 2014).

It goes without saying that both trends –the technological and the generational--will continue to have significant implications on pedagogical methods and approaches. Yet a more recent behavioral trend, especially apparent amongst this same Millennial segment, could soon have an even greater impact. As this article will suggest, the Net Generation should perhaps be redefined as the Netflix Generation. Streaming technologies have created an entirely new viewer experience, of which Netflix is the pre-eminent example, which is already in the process of displacing traditional TV network and cable channel viewing, especially amongst the Millennials and the diverse subsegments of that group. As shall be discussed, there are a variety of reasons for the success of Netflix and similar OTT streaming services amongst this generation. Moreover, the program structure of choice for this segment, in both North America and in Europe, is not the feature length film, but rather the originally produced series.

One global educational institution, the INSEEC Group based in France, taking inspiration from this trend, has invested in creating a new form of teaching methodology based on the principles of a streaming series, complete with professional actors and an engaging storyline. Gaming features, as well as immediate feedback, are also integral aspects to the series. Entitled "Luxury is You" (Le Luxe, C'est Vous), the 11 part series can either be used as a complement to an instructor delivered, classroom course on "Luxury Services Management", or as a self-paced standalone course. In both cases, students need to validate each episode based on a Web-based quiz in order to move on to the next level. At the end, an overall Web-based final validation will be necessary in order to obtain the "Certificate of the Luxury Attitude Academy".

The aim of the current research is twofold: firstly, to assess the levels of student engagement and learning outcomes consequent to the inclusion of a specially produced series, similar in structure and entertainment value to a Netflix type streaming series. A corollary aim is to see the differences, if any, in engagement and outcome when the series is an integral part of an Instructor-led classroom or, rather, a standalone and self-paced study tool.

2. Web 2.0 and the Virtual Learning Environment

The growth of the internet, Web 2.0 technologies and online teaching tools have contributed vastly to encouraging the personalized and individualized learning which, as stated above, is increasingly correlated with positive student learning outcomes.

The "Virtual Learning Environment" is a set of technology tools, such as audio, video, text, animation, and communication (Piccoli G., R. Ahmad & B. Ives., 2001) which can deliver a more customized and personalized learning experience. Such technology-supported learning tools (such as but not limited to Blackboard, Canvas, and WebCT) are also known as learning management systems, e-learning systems, and online learning systems (Al-Busaidi K. A., 2013). The benefits include freeing learners from time and place; provide them with access to an almost infinite array of resources; facilitate collaboration among learners; and give students the ability determine, within limits, the sequence and pacing of their studies (Hill T., Chidambaramb L., & Summers J., 2017).

The rise of Web 2.0 technologies can be seen as facilitating and fostering three new learning approaches which can also be correlated with student engagement and learning outcomes:

- Customization: providing learners with the knowledge they want when they want it and supporting and guiding students individually as they learn.
- Interaction: the ability of computers to give learners immediate feedback, and to actively engage learners in accomplishing tasks.
- Learner control: learners are in charge of their own learning whenever possible, so that they feel ownership and can direct their learning" (Collins A. & Halverson R., 2009).

And yet, despite this potential, the research is still inconclusive when it comes to comparing the results, especially in terms of student engagement and learning outcomes, of the traditional versus online classroom environments. Moreover, Cobo et al. (2014) found that 62% of students tend to use learning management systems passively which in turn diminishes the potential learning outcomes (Hill T., Chidambaramb L., & Summers J., 2017).

2.1 E-learning: Where We've Been, What We've Learned, Where We're Going

Although there is apparent consensus on the potential of online options to promote student-driven learning (Arbaugh J. B., 2008), despite substantial investments in digitizing education to make information and communication technology an integral part of the overall learning environment, results of current research seem inconclusive concerning the impact of the VLE on students' academic performance (Bertheussen B. & Myrland O., 2016; Arbaugh J. & R. Benbunan-Finch., 2006).

Some sources have found no valid statistical differences in learning outcomes between face-to-face and online classes (Arbaugh J. & R. Benbunan-Finch.,2006; Lyke J. & Frank M., 2012). A certain amount of consensus appears to exist however supporting the blended approach as delivering the best pedagogical outcome (Arbaugh J. B., 2014; Callister R. R. & M. S. Love., 2016; Hill T., Chidambaramb L., & Summers J., 2017).

In short, the question of whether online students learn and retain as much as face-to- face students is yet to be definitively answered. In order to better focus their analysis and findings, some authors have fine-tuned their research according to different variables so as to better assess which learning channel could have the greater success. These approaches look at, notably, whether subject matter content could make a difference and whether the nature of the course—quantitative vs. qualitative—could be the determinant for online vs. face-to-face learning success.

2.1.1 Subject Matter Dependencies

There has been considerable research examining differences in learning outcomes depending on the subject matter being taught (Callister R. R. & M. S. Love., 2016).

Consensus has been hard to come by however. Some studies found no real differences while others identified marginal differences depending on the level of the students, such as first year university students as opposed to fourth year (Al-Dahir S., Bryant K., Kennedy K. B. & Robinson D. S., 2014), as well as some differences based on the nature of the exam, theoretical versus clinical for instance (Mosalanejad L., Shahsavari S., Sobhnian S. & Dastpak M., 2012).

2.1.2 Quantitative vs. Qualitative Nature of Courses

Several studies have focused on the quantitative vs. qualitative nature of the course as being a possible determinant for student engagement and learning outcomes. There appears to be some consensus that qualitative courses are more likely to lead to positive online learning results than quantitative subject matters (Arbaugh J. B., 2008); Arbaugh J. & R. Benbunan-Finch, 2006; Ivancevich J. M., Gilbert J. A. & Konopaske R., 2009).

2.1.3 The Blended Approach

The most consensus for successful learning results is around the blended approach, sometimes also referred to as the Flipped Classroom. Courses that combine online and face-to-face learning have had higher academic outcomes than either purely online or purely face-to-face instruction (Marsh J. & P. Drexler, 2001).

The benefits of the two approaches are different. The benefits of the online experience is that it enables the student to learn at his or her own pace (Al-Busaidi K. A., 2013; Santhanam R., S. Sasidharan & J. Webster.,2008) [28-29]. The benefits of the in-class experience include encouraging interaction, facilitating clarification and providing immediate feedback (Zenger J. & C. Uehlein., 2001) [30]. Feedback in turn is seen as a strong predictor of future academic performance (Hill T., Chidambaramb L., & Summers J., 2017; Swan K., 2002), and it has been suggested that feedback, if properly designed into the pedagogical approach, may provide the impetus for use of the online component of blended learning (Daspit J., & D. D'Souza., 2012; Hill T., Chidambaramb L., & Summers J., 2017; Tsai C. W., P. Shen, & M. Tsai, 2013).

2.1.4 Importance of Feedback and Learner Control in Learning Outcomes in the VLE

Other research has shown that the provision of performance feedback strongly predicts future effort, and thereby future performance. Research has shown that when motivated learners are provided rapid appraisals of their performance, they adjust future behaviours accordingly, either by looking for ways to improve their performance or continuing their patterns of behaviour. In fact, some research shows that students who received feedback on self-regulated learning in an online course had substantially higher learning outcomes than those who did not receive feedback (Hill T., Chidambaramb L. & Summers J., 2017; Tsai C.-W., P. Shen and M. Tsai., 2013).

Learner control was also correlated to the extent that the online learning system was actively used (Hill T., Chidambaramb L. & Summers J., 2017; Piccoli G., R. Ahmad & B. Ives., 2001).

The importance of active learning in the online environment appears important to overall outcomes:"Active course designs are based on the assumption that an active learner, or one who is involved in the learning process, learns much more effectively and the learning experience is more intense and permanent than for passive learners enrolled in a traditional lecture style class." (Wingfield S. et. al., 2005). Experiential learning is rooted in active course design. Experiential learning theory is based on more than theory, and instead suggests that learning is an active process (Kolb A. Y. & Kolb D. A., 2005). Other research has shown that experience based learning—which can refer to "curriculum-based face-to-face interactions….[such as] faculty-directed internships, practica, directed applied research, travel study, etc", in contrast to the readings and lecture format of lecture-based education, had significant cognitive benefits (Wright E. R. & Lawson A. H., 2007).

Researchers have also found that the Net Generation — today's students —have a marked preference for experiential, hands-on learning, due in large part to having grown up "digital" (Oblinger D. & Oblinger J., 2005).

2.2 The Visual and Virtual Generation of Students

Faculties everywhere today are confronting a new kind of university cohort: the so-called Generation Y and Generation Z members, with Generation Y typically born between 1987 and 1994 (Deeter-Schmelz D., 2014; Weiss M. J. (2003) and Z born between 1995 and 2009 (Williams S., 2010). These two populations are frequently referred to together as Millennials.

Several common characteristics have been identified across these groups: an attachment to technology, including acquiring the latest tech gadget (Oblinger D., 2003; Worley K., 2011); an ease with using computers and technology (Means B., Toyama Y., Murphy R., Bakia M. & Jones K., 2010); and significant abilities to multi-task (Williams S., 2010). Perhaps as a corollary to the multitasking ability is short attention span, and a deterioration in reading skills or aptitudes (Means B., Toyama Y., Murphy R., Bakia M. & Jones K., 2010).

Such students prefer using technology to gather content, with action and results more important to them than the accrual of facts (Oblinger D., 2003); they prefer visual learning and seeing concepts as opposed to reading about them (Black A., 2010); they like to have more control over how messages and information are received (Williams S., 2010); and they prefer being entertained when gathering information (Morton, 2003).

As a result, faculty need to find ways to incorporate "new technologies, new modes of communication, and engagement and interaction into the learning environment" (Worley K., 2011).

2.2.1 The Role of Videos in Student Engagement

The notion of student engagement has been defined and measured in different ways over the past few decades (Burch G., Heller N., Burch J., Freed R. & Steed S., 2015; Dixon M., 2015). Trowler's definition for student engagement is "the time and effort students devote to activities that are empirically linked to desired outcomes of college and what institutions do to induce students to participate in these activities". Three dimensions have been associated with student engagement:

- Behavioural engagement: a student's ability to abide by behavioural norms, which include attendance, attention and effort (Trowler V. & Trowler P., 2010).
- Emotional engagement: the extent to which a student experiences affective reactions, which can include interest, enjoyment or a sense of comfort towards educators or extracurricular activities (Wolters C. A. & Taylor D. J., 2012).
- Cognitive engagement: a student's competency and willingness to learn and establish goals (Archambault I., Janosz M., Fallu J. S. & Pagani L. S., 2009).

Several studies have found a correlation between student engagement, and student learning outcomes (Carini R. M., Kuh G. D. and Klein S. P., 2006;Kuh G.,2001; McCormick A. C., Kinzie J. & Gonyea R. M., 2013; Pascarella E. & Terenzini P. 2005). The online environment has furthermore been found to have significant potential to actively engage with students (Robinson C. C. & Hullinger H., 2008).

As digital technology has evolved, concomitant with the development of fast access streaming channels, video has become an important part of many courses as it seems to be a more effective teaching channel than methodologies based on books or text material, since online videos encourage active learning approaches that in turn enable easier assimilation of information. The results of one particular study — focusing on the classroom and extracurricular usage of Khan Academy films — suggested that students in the flipped courses using the videos scored between 4 and 14 percentage points higher on a set of common questions and a cumulative final exam. (Caviglia-Harris J., 2016).

Interactive classrooms where video is an integral pedagogical element have been shown to improve student understanding of concepts, maintain engagement, and create interest in the field (Durham Y., T. McKinnon & C. Schulman, 2007; Carter L. K. & T. L. N. Emerson, 2012). The online videos have been shown to serve as additional review tools, as well as a "virtual on-demand tutor" for students, enhancing classroom discussion, problem solving, and critical thinking (Forsey M., M. Low & D. Glance, 2013; Green T., 2015).

Part of the benefit of the online learning experience is that it allows for autonomous learning. According to Peters (Peters O., 1998), it has been shown that autonomous learning not only allows students to take initiative and plan their individual learning journeys: they are forced to do so. Deciding where, when, how long and how fast to study obliges students to become responsible for their learning. In the process they also become more active learners.

Other research has shown those not only do educationally intended videos, such as those on Khan Academy, have an impact on engagement and learning outcomes. So too can the use of videos such as those widely available on YouTube also be applied in classroom settings to enhance engagement and outcomes (Clark T. & Stewart J., 2007; Roodt S., 2013). Some researchers have focused on the learning impact of students themselves actively engaged in finding media clips to support the themes addressed and general class discussion (Donovan-Poulenez C., 2016). The results showed that student selected media clips led to improved student awareness and understanding of course concepts. Film content has also been shown to provide a familiar attention-capturing and visual way to engage students (Scherer R. F. & Baker B., 1999).

This is perhaps not surprising, given that undergraduate students today have grown up as watchers, not readers (Donovan-Poulenez C., 2016). Already in 1986, researchers called their students the "TV Generation". It was shown that student learning, interest and motivation could be enhanced through the use of TV shows, films, and other clips (Adams L., Fan Y. & Morgan J., 2013; Donovan-Poulenez C., 2016; Taylor V. F. & Provitera M. J., 2011).

About 20 years later, researchers observed the evolution of students into the virtual realm as well: they were not just visual, but also virtual (Proserpio L. & D. A. Gioia., 2007).

Other researchers called this the Net Generation, referring to a homogenous group who have grown up with and are immersed in technology (Kennedy G., Judd T., Dalgarno B. & Waycott J., 2010). They are characterized as operating at "twitch speed", responding to and expecting feedback almost instantaneously (Duffy P., 2007). They also prefer gathering information through pictures and videos over text (Helsper E. J. & Eynon R., 2010).

As they are tech-savvy, students from the Net Generation embrace different learning approaches (Bennett S. & Maton K., 2010). It is for this reason that technological tools within the classroom are becoming mandatory if Net generation students are to be engaged, since these tools enrich course content and thus improve student engagement (Roodt S., 2013; Caviglia-Harris J., 2016; Roodt S. & De Villiers C., 2011).

Other characteristics noted about this generation and which could have an impact on higher education include:

- Being connected — They are almost always online.
- Experiential — They have an exploratory style of learning with a preference for 'learning by doing'.
- Social — They seek to interact with others in their personal lives, their online presence, or in class, hence the success of social networks.
- Engagement and Experience — They like interactivity, for example: watching a YouTube ® video on a topic instead of reading slides.
- Visual and Kinaesthetic — They are more comfortable in image-rich environments than with text (Oblinger D., 2003; Oblinger D. & Oblinger J., 2005).

2.3 Adding Games to Videos

Gamification can be described as the use of game elements such as rewards and achievement levels in situations which are not games in and of them, but rather serve an educational purpose. It has been shown that the use of leader boards, badges and rewards are ways to encourage students to engage more actively in the VLE. There is apparent consensus that one key advantage of educational games is that the overall learning experience becomes more motivating and appealing (Bryant L., 2018; Rieber L. P., Smith L. & Noah D., 1998). The reason behind this finding is that games encourage drive, engagement and fun (Annetta L., 2008; Roberts D. F., Foehr U. G. & Rideout V., 2005).

Gaming as a corollary in successful teaching has been researched for several years (Juul J., 2005; Klopfer E., Osterweil S. & Salen K., 2009;Young M., Slota S., Cutter A., Jalette G., Mullin G., Lai B. & Yukhymenko M.,2012). Until recently, most of findings focused on student learning outcomes. More recent research has focused on the correlation between gaming and student satisfaction and engagement (Boyd S., 2016; Connolly T., Boyle E., MacArthur T. & Boyle J., 2012).

Researchers have shown how game playing in general can lead to better student engagement (Auman C., 2011) as well as to enhance active and collaborative learning (Boyd S.,2016; Moizer J., Lean J., Towler M. & Abbey C., 2009). Other studies suggest that online learning can be enhanced with the inclusion of gaming (Varney J., 2016).

2.4 The Streaming Series and the Millennial/Net Generation

A technological development which is having a huge impact on traditional telecom providers, in particular television and cable has been video streaming. A variety of research firms have studied these trends, both in the US and abroad, and have come up with similar conclusions as to the preponderance of over-the-top (OTT) video streaming service providers, in particular Netflix.

In the US, more homes have access to streaming services than to cable TV: 61% of total homes had cable, while 67% had access to or watched any streaming service. Homes with millennial occupants had access to far more streaming services, and a majority with such generations at home had either cut their cable subscriptions, or had no cable whatsoever. And among the numerous OTT streaming service providers, Netflix was the most

popular by a wide margin, and that 85% of millennials in the US subscribe to at least one OTT video service — Netflix — and that 25% of those subscribe to three or more such services (Baumgartner J., 2018).

Given such findings it is no wonder that streaming has become the new normal for millennials (Horwitz Report, 2016). Amongst millennials, 54% of TV viewing time is spent streaming, with just 25% live. This is in contrast to the population at large, where 50% of viewing is live, and 29% streamed. The same report showed that whereas amongst millennials the weekly share of streamed viewing rose from 15% in 2012, to 54% in 2016, traditional viewing has dropped from 75% to 39%. And, also in this study, Netflix has been identified as the "go-to" source for TV amongst this generation (Horwitz Report, 2016).

Focusing specifically on Generation Z, a study shows that a real synergy exists between Netflix in particular, and the 7–22 years old that comprise Generation Z. A survey of nearly 8500 Gen Z-ers demonstrated that Netflix was their fourth favorite overall brand in the world, whereas no conventional and popular American TV network such as MTV, Nickelodeon, or Comedy Central, even made the top 100 brands. A study by Business Insider suggested that 62% of Gen Zs used an online streaming service, primarily Netflix, as their primary video source. One of the reasons, according to researchers, was that this particular demographic generation was "driven by a need to be in the know" about the various series in order to be able to participate in the social conversation (Berman J., 2019).

The same trend for streaming services, and in particular Netflix, is not limited to American millennials. In France, 11% of millennials view streaming services, such as Netflix and Amazon Prime, on a daily basis; only 4% of the older population does so. Typically, these millennials watch video on demand on one of the OTT streaming services an average of one hour and 48 minutes a day, with the series being the major chunk of that time, at one hour and three minutes a day — the length of a typical series (Bonacossa J., 2018). An interesting finding is that watching videos online on YouTube, Facebook and Twitter represents only four minutes a day amongst millennials (Bonacossa J., 2018).

3. Our Research

3.1 The E-movie Learning Concept

In that context, in 2015 INSEEC-U Group with one of their brands, Luxury Attitude, decided to adapt and innovated by creating a new concept called "e-movie learning". The e-movie learning concept includes on demand series streaming, social sharing, gamification and traditional assessment.

The starting point is a TV series, made up of short episodes (20 mins max); this series is professionally produced with a real scenario, a real story and real actors. The scenario has been built is such a way that each episode includes a learning objectives, along with one or several learning goals defined by the academic team. The platform complemented each episode with additional videos, including interviews of CEOs of leading global companies, as well as scormed packages containing academic content. Once they have watched all the videos of a given episode, students are requested to answer specific questions as well as to upload on the platform their own observations from personal experience about the topics covered in the episode. This portfolio of information can be shared with the course leader and the wider "Luxury Attitude" community. Gamification plays an important role here, since each time the shared portfolio is liked by other member of the community (the class, the active learner, all the community) it grants additional points to the "liked" student.

Moreover, after every four episodes a compulsory quiz has to be done on the platform; this quiz can be repeated as many times as needed to achieve the required minimum score of 80 out of 100. Once this score is reached the next episode becomes available, and an algorithm grants a certain number of points to the student according to the number of attempts and the results reached. Each quiz can be run at home or in class, it depends if the course is delivered in a blended format or completely asynchronously.

There is a final assessment as well, the final Quiz, assessing and summarizing all the concepts covered since the beginning. Once this quiz has been passed, the last bonus episode (12th) is unlocked.

3.2 Measures of E-movie Learning

We ran the course over the last three years using different formats of delivering: completely asynchronous; asynchronous but with the quizzes in class; or blended with additional in class teaching sessions with a professor complementing and invigilating the evaluations in class.

The purpose of the diverse delivery methods was to assess the differences if any in performance and engagement.

We tried to measure engagement following the three dimensions described previously: Behavioural, Emotional and Cognitive engagement.

Measure of the Behavioural engagement: Behavioural engagement defines a student's ability to abide by behavioural norms, which include attendance, attention and effort (Trowler V. & Trowler P., 2010). The online platform used is based on the Moodle system, allowing the collection and analysis of various quantitative measures such as: total number of connections; average number of connections per week; time spent on the platform per week per episodes; and, finally, respect of the deadlines (episode to be completed, or quiz to be passed, etc…). These logs seemed relevant as a measure of Behavioural engagement. Other information retrieved, like time of connection, could provide additional qualitative insight on student behavioural engagement.

Measure of Emotional engagement: Emotional engagement defines the extent to which a student experiences affective reactions, which can include interest, enjoyment or a sense of comfort towards educators or extracurricular activities (Wolters C. A. & Taylor D. J., 2012). The measure of this emotional engagement could be performed based on the qualitative analysis of the personal portfolio written by each learner (quantity, quality), and his or her ranking along the parameters of being liked, and liking others.

Measure of Cognitive engagement: Cognitive engagement defines a student's competency and willingness to learn and establish goals (Archambault I., Janosz M., Fallu J. S. & Pagani L. S., 2009). This measure could be performed thanks to other metrics like quiz results, or the number of attempts before reaching the required 80 out of 100 grade on each quiz. More interestingly, we could compare the results of quiz results when done in class, or remotely.

3.3 Measures and Findings

A lot of different measures and analysis have been performed, some of them aren't really meaningful, for example some students were allowed to use the platform in French and others in English, therefore some elements of the analysis have yet to be performed while awaiting translation. Notwithstanding this, the data has provided some very interesting insights, as described below.

Behavioral engagement measures could be extracted from log analysis. The logs retrieval process was not 100% perfect since the platform changed once in the period, so we could only use a certain amount of the data. Nevertheless, the data showed an average number of connections above 50 per student, with more than 5

connections per episode, and an average time spent on the platform of 21 hours per student. The average time spent per episode on the platform is reaching 2 hours. Knowing that the movie series is only 20 minutes, this reveals that the student watches the episode several time, in order to create his or her portfolio of observations as well as reply successfully to the questions.

Meeting deadlines is another measure that could be explored to describe behavioral engagement. In the last three years of operations, I asked my students to take the intermediary quiz online during a particular evening before midnight. There is one quiz per every four episodes, for a total of three intermediary quizzes. The students were allowed to meet to do it, they were allowed to exchange ideas while at a Starbucks café for example and reflect in groups during this particular evening. However, each student had to individually complete each quiz using their own login name. In the last three years, less than 1% of the students missed these deadlines. This percentage is much less than a typical quiz administered in class, and is thus a telling measure of Behavioral engagement.

An interesting proposal to measure of Emotional engagement could be the analysis of the student portfolio posts shared amongst one another. Each episode includes additional questions linking personal behavior and topics covered during the chapter. The portfolio posts can be shared with the community, the members of whom interact, by commenting and/or liking student posts, through a private social network. The posts from the 99 students involved in the analysis have been extracted from the platform and put in a corpus analysis tool nvivo 12 to simply count for each posts the number of words. On average each post shared with the community exceed 50 words, whereas the posts answered, but not shared, are clearly smaller, at less than 20 words. The pattern that could be defined is that behavioral engagement is positively impacted by this sharing system, with qualitative comments coming from the community along with likes operating almost as a collective grading system.

Finally, the results of the various quizzes and the final assessment could be used as a measure of cognitive engagement.

Table 1 Average Performance on the 4 Assessments on Last 3 Groups of Students (Population 99)

Type of validation	Quiz Average	STDDEV	MIN	MAX
Validation 1 (home)	89.07216495	7.08	80	100
Validation 2 (home)	89.39515464	6.66	80	100
Validation 3 (home)	88.5326087	6.23	80	100
Final Validation in class	89.04761905	6.65	80	100

Interestingly there is no significant performance difference between the first 3 quizzes done remotely in the evening, even potentially working together collaboratively, and the final individual validation performed in class. This measure leads to the reflection that a student's competency and willingness to learn, as measured by the quiz results, shows that the e-movie learning model positively affects cognitive engagement since in class assessment is even better than in the previous quizzes.

4. Limitations & Further Studies

The limitation of this study is clearly the reliability of data collected through the platform's logs. We succeeded in extracting a significant amount of data, but could not exploit more than half of it. Moreover it is obvious now that some data seems to be more relevant than others to measure student engagement, and that some

of them do not yet exist (such as number of likes, number of shares, number of comments..). The collection of additional data needs to be implemented on the platform in order to more precisely refine these measures.

Lack of benchmark: the Moodle platform is used for all courses at IUM, whether they are online, blended, or in class. While an enormous amount of logs are available, the retrieval of such data to benchmark our current measures is still in process. The next step of this study will be to extract data from other IUM courses in order to be able to compare them with the data retrieved from the e-movie learning platform.

Multilanguage problem: the platform is available in French and in English; therefore the Qualitative data (portfolios, comments etc.) are split into both languages. A translation process into a common language (probably English) would need to be implemented in the platform for homogeneity purposes of the data before analysis.

The e-movie learning Luxury Attitude is proposed to a professional (executive education) audience as well, but for confidentiality reasons this data wasn't accessible yet. An interesting additional study could be to compare Gen Z students' engagement and performance data with executive's (Gen X & Y) in the context of this e-movie learning platform.

5. Conclusions

This paper's main purpose was to try to understand if and how student engagement can be measured in the context of an online class. For that, the Luxury Attitude e-movie learning module in the framework of the e-movie learning platform developed by INSEEC-U Group has been used. An attempt at behavioral, emotional and cognitive engagement measures was performed, through logs and performance analyses, using both qualitative and quantitative data.

The findings of this study clearly show that a measure is possible for behavioral, emotional and cognitive engagement. The most interesting results may be that GenZ students, through their journey in e-movie learning, seem to learn quite naturally thanks to the platform's ability to provide on demand learning, collaborative learning and data sharing. The final evaluation assessment in class showed a very high performance rate, equivalent to the assessment operated asynchronously. Moreover, it has been seen that feedback from the community through social network comments, complements the professors' feedback to students, and that the "Likes" from the community can have a better impact than grades in term of engagement.

All these observations not only showed us that a measure of student engagement is possible, but also that adapting courses and teaching methodologies to the Netflix Generation have a positive impact on student engagement and thus on learning outcomes.

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