The Heroic Journey of a Learner in STEM courses

A. N. Author[a] and John Smith[b]

[a]Taylor & Francis, 4 Park Square, Milton Park, Abingdon, UK; [b]Institut für Informatik, Albert-Ludwigs-Universität, Freiburg, Germany

ABSTRACT

Science, Technology, Engineering, and Mathematics (STEM) show us relative studies about attraction and retention of students, such as lack of lucidity regarding the profession. In particular, female students present other challenges to be overcome, as the issue of gender equality, understand mainly through cultural issues in a predominantly male language. Some learning methodologies has shown positive results, evolving in the field of education and some of them, as Problem Based Learning (PBL) has been showing positive results. We believe motivation is also an important ally to help solve the challenges currently presented in STEM, especially with regard about women's presence in courses and job market. The narrative is a structure that presents a logic of functioning, known as a beginning, middle and end. Through these three basic structures, it is possible to insert several events, characters and images, in order to insert view's life point at characters, working as a motivation to follow the trigger of the facts. From the creation of the monomyth, presented in the form of Journey of the Hero, the narratives were also thought of as a way of transforming the human being. Separated in stages, these narratives can describe how the main character, in the form of Hero or Heroine, can have different stages, such as development, growth and learning in her feminine form, from Heroine's Journey, or departure, initiation and return in his Masculine form, from the Hero's Journey. The purpose of this article is to analyze the narrative, which is a game element, like a gamification model's proposal, which will be applied in STEM courses, to solve problems, for example, low participation of girls in courses and technological projects and increase the confidence of girls entering the labor market. We analyze current factor's such as student retention, attraction and motivation. These subjects, which are being discussed in the STEM area, include factors on behavior, motivation and feedback. We analyzed motivational theories and identified the theory of self-determination as a theory widely used in motivation proposals. Gender inequality in the area of STEM has encouraged us to identify and discuss the two journeys, in the male version and in the female version, to support the basis of our model, The Heroic Journey of a Learner in STEM courses. The Narrative for a Gender-Balanced Learning Journey, The Heroic Journey of a Learner in STEM courses, seeks to increase the rate of girls studying STEM over appropriate language. Through narrative and motivational actions, presented in form of the heroic journey, Students can relate to the following course tasks, develop a greater interest in mastering new knowledge and reinforcing self-confidence. In addition, the proposed model is based on gender equality, containing inclusive language and design for the female gender. When creating a Student Club, girls will be able to connect, exchanging experiences from different countries, but with the ease of sharing the same language. At the end of the experience, our intention is that students will feel more confident and better prepared for a career opportunity in the technology sector. This article first describes the basic structure of the hero and heroine journeys and then the adaptation of the original concepts of both journeys to our needs.

CONTACT A. N. Author. Email: latex.helpdesk@tandf.co.uk

Subsequently, it presents a position on gender equality in STEM and presents the proposed paths for the application of the model, encouraging girls to understand the areas of technology and mathematics, strengthen against prejudices and begin their preparation for the labor market.

1. Introduction

As a result of different cultural, educational and technological issues, such as curricular overload, time disputes with leisure activities, personal insecurity, lack of self-confidence and traditional teacher-centered learning methods, engineering undergraduates generally have difficulties in entering and persist on their degrees, especially in first years (Hutchison-Green, Follman, & Bodner, 2008; Meyer & Marx, 2014; Tseng, Chen, & Sheri Sheppard, 2011). Sometimes young women feel a greater burden entering Science, Technology, Engineering and Mathematics (STEM) degrees and feeling welcome there (da Costa, 2016; Lee, Starr-Mitchell, Nunes, Black, & Schmidt, 2017), since sometimes they are the "Only Woman in the Room" (da Costa, 2016; Pollack, 2015). Due to all these issues, several Higher Education Institutions (HEI) are concerned about keeping students' attraction and retention rates high, especially in STEM topics (Cruz & Kellam, 2018; Meyer & Marx, 2014).

Trying to answer the question of what can motivate a STEM student to persist in a course, amongst different learning approaches, our main interests go to new developments in flipped classroom strategies (Bishop & Verleger, 2013), self-regulation of the learning process (Zimmerman, 2008), applied gamification (Deterding, Dixon, Khaled, & Nacke, 2011; Dichev & Dicheva, 2017; Hamari, Koivisto, & Sarsa, 2014) and the application of the Hero's journey (Campbell, 2008) and Heroine's journey (Murdock, 1990) narratives as a motivational and self-regulation tool.

Storytelling can often be used to help people to understand who they are and also to make sense of the world around them (Campbell, 1988; 2008, Murdock, 1990; 2013). One can find in many novels and stories the Hero character archetype, in others, the Heroine archetype. The understanding of these archetypes, the first defined by Campbell and the later defined by Murdock, can in turn help us to understand the journey of a student during his/her course of studies during graduation. After all, would a graduate student be a Hero/Heroine?

The heroes/heroines face a journey full of emotions, dangers, and are challenged by large enemies like dragons or menacing stepmothers. Both heroes and heroines also get help from mentors, find treasures, receive rewards and return to the world to help others (Pearson, 1991, 2015).

For a given student, the journey is the learning process itself, where dragons are the problems to be solved, written tests and examinations to overcome, and their treasure is progression of their skills through their self-confidence. As a hero or heroine, the student may feel lonely on the quest for knowledge and must assume their own responsibility to do it by himself or herself. In this journey, both the student and the teacher seek answers to contribute to a collective transformation.

In this article, we describe the Hero's journey, the Heroine's journey, and give an explanation how it can help Engineering undergraduate students through the application of a gamification model, based on heroic narratives, which will be applied in Machine

Learning with Mathematics at ¡Anonimous¿, contributing to learning theories area, STEM pedagogy, gender equality, self-regulation of learning and learning design.

Our intention, after structuring the entire journey, design, software development, testing and simulation, is to apply the entire process in an ¡Anonimous¿ online course. Massive Open Online Courses (MOOCs), have gained public attention as a particular form of open and virtual high education that potentiate many benefits, such as expanding diversity in access to education, creating opportunities for transition to formal higher education, improving student self-learning, and encouraging lifelong learning (Arimoto, Barroca, & Barbosa, 2016).

As a result, we intend to enhance the use of the MOOC ¡Anonimous¿ platform and keep high levels of motivation among undergraduate engineering students and teachers during the several STEM courses. Helping students to end their cycles successfully whilst acquiring knowledge, teachers to apply meaningful assessments at the same time that they build knowledge.
[1]

EdN:1

1.1. When Students Choose Engineering Topics

Recent studies presented predictive and psychosocial factors associated with the performance and interest of high school students in STEM and higher education programs, as well as in STEM careers, considering the focus on student gender and other variables (Ghazy, Ratner, & Rosenberg-Lee, 2019; Hosova & Duchovicova, 2019; Lazarides & Lauermann, 2019; Musiimenta et al., 2019).

Cruz and Kellam (Cruz & Kellam, 2018) interviewed 21 engineering students and analyzed the factors that lead students to seek the STEM area. As a consequence of this study, the authors indicate that hero's journey metaphor is a useful way to offer content and narratives to students.

Expanding this discussion about the challenges faced by students and candidates for graduation in the STEM areas, we can analyze that the issue of gender equality in the STEM areas it is a global challenge, and has researches that provide scientific data to prove low participation of women in STEM courses, also in the job market. The indices that show how many women are affected can be found in organizations like the World Bank (World Bank 2020), Unesco (UNESCO 2019), and the European Commission (EUROSTAT 2019), which have data on these issues. The OECD recently brought new results based on data from the OECD's International Student Assessment Program (OCDE, 2018).

This study[2], based on the hero's/heroine's journey narrative (see later definition), helps us to understand the factors that can influence the students' choice as they transition into engineering courses, as well as the competing factors that demotivate or prevent future undergraduate students from seeking careers in engineering.

EdN:2

1.2. Motivation, Behavior and Feedback

There are several motivational theories, defined and published by different authors. These authors research and publish mainly in the areas of psychology and human behavior. It is possible to verify that, in each of these theories, it is possible to find

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[1]EDNOTE: Aqui ainda faltou falar que cursos de Engenharia pdoe ser vistos como cursos de homens para homens e a importância de mudar isso. Pegar algo de gender equality

[2]EDNOTE: This agora é o seu? Porque você usou this para o outro (eu mudei para that)

references to concepts such as engagement, productivity, motivation or even feedback.

According to Garris, motivation can be understood as a person's option to get involved in a task and the intensity of their effort or persistence in that activity (Garris, Ahlers, & Driskell, 2002). Social psychology, presented in behavioral research, cites attitude as an important driver of behavior (Ajzen, 1985). For Geraerts, there is a part of the irrationality in decision making by human beings (Geraerts et al., 2008). According to this author, the difficulty with rational action models is that they are "very rational", without taking into account the cognitive aspects and affective processes that influence human judgments and behaviors.

Lock and Lathan present a theory of goal setting and task performance, that help motivate people to work harder in any capacity (Locke & Latham, 1990). The authors Schaufeli, Bakker and Salanova define engagement as a state related to achievement, characterized by vigor, dedication and focus (Schaufeli, Bakker, & Salanova, 2006). According to these authors, engagement refers to a more persistent and generalized affective-cognitive state, which does not focus on any particular object, event, individual or behavior.

Currently, there are two dominant aspects that can be identified in determining motivation: extrinsic and intrinsic motivation (R. M. Ryan & Deci, 2000). Intrinsic motivation is inherent to users, without necessarily being based on the world around them. Extrinsic motivation, on the other hand, can be characterized as external commitments, influenced by the environment (in particular society), such as, for example, the desire to earn money (Zichermann & Cunningham, 2011).

The theory of self-determination (R. M. Ryan & Deci, 2017) started its construction, based on studies related to the intrinsic motivation of human beings. This theory continues to be developed and widely applied, passing, over time, to incorporate other models related to goal for example. This demonstrates that the development of the theory of self-determination is carried out by a wide number of scientific researches, discussions and debates, as we can observe more carefully in a recent article, published by the authors, who helped to substantiate the initial characteristics of this theory (R. M. Ryan & Deci, 2019), through its influence on work organizations (Deci, Olafsen, & Ryan, 2017) and on the history of theories of human motivation (R. Ryan, 2019).

Student-related behaviors need to be analyzed inseparably from a set of motivational characteristics. A student's attitude, inside or outside the classroom, during his learning process, involves a relationship with several people, from teachers, classmates, parents, friends, educational institutions, market, private companies and society, using pedagogical tools. and technological methods, different techniques and tools. These complex relationships bring with them a set of beliefs, emotions and behavioral intentions within specific activities, raising questions that involve working together with all parties in the construction of knowledge.

1.3. Project Based Learning

Research on self-regulated learning in engineering projects is growing (Zheng et al., 2020). Results indicate that reformulation and analysis are the two self-regulated learning activities that can lead to an improvement in knowledge (Zheng et al., 2020).

According to Blumenfeld et al. (1991) "Project-based learning (PBL) is a comprehensive perspective focused on teaching by engaging students in investigation. Within this framework, students pursue solutions to nontrivial problems by asking and refining questions, debating ideas, making predictions, designing plans and/or experi-

ments, collecting and analyzing data, drawing conclusions, communicating their ideas and findings to others, asking new questions, and creating artifacts".

The PBL has an investigation structure that allows identifying different moments where students need to perform different tasks. In this sense, it can be included in each of the stages of a journey, experienced by students.

In their literature review, Condliffe, Visher, Bangser, Drohojowska, and Saco (2016) state that a new focus on interpersonal skills, in addition to advances in educational technology, may open up new opportunities for implementing the PBL approach.

In addition, recent research show that problem-based learning environments, which have been extensively investigated and applied in software engineering education programs (Tadjer, Lafifi, Seridi-Bouchelaghem, & Gülseçen, 2020), confirm that students' cognitive profiles and social skills can be improved through implementation of this methodology, converging with the current needs of the labor market, which require social skills, such as the ability to communicate, analyze, solve problems and work as a team. (Tadjer et al., 2020).

2. Relevance of the narrative in the learning process

2.1. Storytelling

The notion of narrative structure was conceptualized since ancient times by Greek philosophers like Aristotle and Plato (Page & Thomas, 2011). Aristotle proposed a three-act structure for the narrative. This concept has been refined over time and is commonly referred to as configuration, conflict and resolution.

This criticism is involved with a series of narrative concepts, including questions about plots, structures of events and temporality, as well as questions about how stories are produced and lived, debated in relation to subjects such as interactivity and immersion (Page & Thomas, 2011).

Stories resonate and remain with us in a way that data alone cannot. Narrative concepts can be applied to communicate with large volumes of data, which cross information and generate metrics and indexes for the actors. A story has a beginning, middle and end. It needs to include the power of repetition, narrative flow, considerations with spoken and written narratives, to ensure that our story is clearly revealed in our communications (Knaflic, 2015). A good story can hold your attention and take you on a journey, evoking an emotion, an intentional response. Through digital stories it is possible to obtain a form of video communication that incorporates images and sounds along with the narrative, to insert a perspective or story (B. Robin, 2006; B. R. Robin, 2008).

In 2020, Madsen presents emerging narratives of game design theory as a model. The narrative is applied in the cultural area, but serves as a reference to discuss how the criteria of emerging narratives can support exploratory behavior for its users (Madsen, Skov, & Vistisen, 2020).

2.2. The Heroine's Journey vs. Hero's Journey

The heroine's journey has always existed in epic myths and legends, although it has often been underestimated (Frankel, 2010).

Despite this fact, about the little discussion about the role of heroines, there are some questions in the literature about how this question, of gender balance, can be improved

and discussed. For this article, this subject is relevant since all genres of students have space within education and therefore whenever necessary, consideration should be given to analyzing and proposing situations of gender equality in the development of new forms of learning and in this case , through the narrative of the Heroine and Hero journey.

Frankel details that all tales of heroines are tales of sacrifice, courage and brilliance. In his analysis, women have always had a power that men lacked, leading to the initial role of the Great Goddess who ruled supreme over all. In addition, according to Frankel, as women today read, write, create, elaborate and pray, they seek to take advantage of this lost power, to become saviors and protectors of man, saviors of their children, guardians of the family and, therefore, from all over the country and cosmos (Frankel, 2010).

In 1990, Murdock believed that gender inequality was an important question to be faced. According to Murdock (1990) "We live in an androcentric society, which continues to view the world from a masculine perspective. Despite women's advances in academia, business, and the professions, stereotypes persist that impede women's economic, political, and professional progress into top leadership roles" . Especially, in the field of technology, Murdock (1990), in 1990, states "...technology industry is largely a men's club..."

Besides Frankel, Maureen Murdock is also an influence on the construction of the feminine vision. The Heroine's journey model is derived in part from Campbell's model of heroic mission. The language of the steps, however, is particular to women (Murdock, 1990).

In his book "The heroine's journey" Murdock says he met Campbell personally. On this occasion of the meeting between the two, in 1981, Murdock reports that he already understood the stages of the heroine's journey that had been incorporated by aspects of the hero's journey. However, according to Murdock, the focus of female spiritual development was to heal the internal division between women and their feminine nature. (Murdock, 1990).

Like Jung formed the opinion about archetypes and Universal Mythology (Jung, 1981), it was Joseph Campbell who defined the archetype of the hero, embodied in the myths and legends of many cultures, with a common motive. A cycle, a journey and a return (Campbell & Moyers, 1988).

Campbell believed that, through metaphors, everyone wants to experience novelty and face challenges, being transformed through this process. Metaphors are conceptual devices that help people make sense of new experiences, comparing them with things that are more familiar (Lakoff & Johnson, 2003).

They are elements of the adventure, about the hero's archetype: starting point in a familiar world; an adventure call or a new challenge; challenges and trials along the way; assistance from magical helpers; victory as the hero faces the greatest challenges; new learning and personal transformation through experience; return to the previous world, having an elixir or benefit to share; and a return to original life, "master of two worlds and not one" (S. Hudson & Inkson, 2006).

In "The Writer's Journey: Mythic Structure For Writers", Vogler simplifies the Hero's Journey, divided into three categories: Departure, Initiation and Return, which go back to the three-act structure that is commonly used in cinema today. In addition, Vogler states that all stories consist of some structural elements found universally in myths, Fairies, dreams and films (Vogler, 2007).

There are many others adaptations of journeys, like (K. Hudson & Vogler, 2010; Schmidt, 2007) and web pages present other views (*Healing Journey*, 2015)(Theodora,

13pm, Jorneys.com). In our adaptation, to learning STEM, we will use Murdock (1990) and Campbell (2008) as base.

(a) The Female Vision.
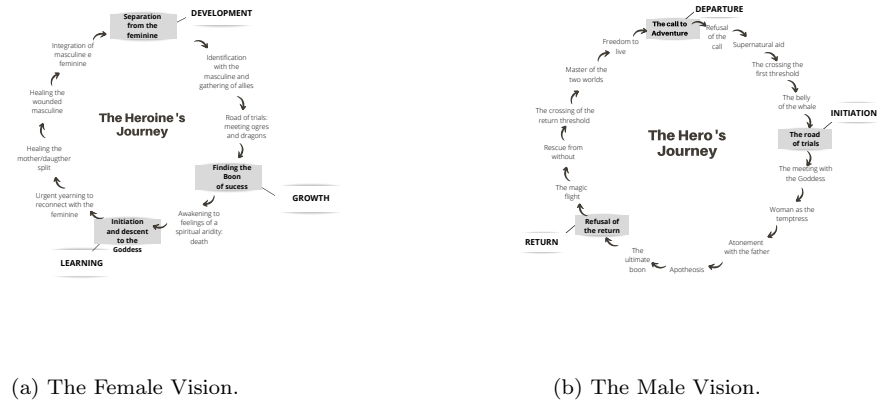
(b) The Male Vision.

Figure 1. The Heroic Journeys: Male and Female Vision.

2.3. The Hero's Journey, by Campbell (Campbell, 2008)

According to the Monomyth concept, the call to adventure comes to a hero who is ready for it. Most of the time the hero is a nobleman or of divine origin, but they were created as normal humans. The call usually comes from a herald, which can appear in a multitude of ways. The call means that the beginning hero is ready to leave for the unknown world.

The hero may be reluctant or unable to respond to the call, however, the refusal usually only delays the inevitable acceptance. Once the task is accepted, the hero encounters a protective figure, usually seen as an old man or old woman. This Guardian Force provides the hero with the necessary tools to succeed. With the help of this guardian, the hero travels to the edge of his known world. There he meets the threshold guardian, who has both a protective and a destructive aspect.

The hero must challenge the guardian in order to pass the threshold and throw himself into the unknown. In this place, the hero undergoes a metamorphosis. If he is able to let go of the ego, he will be able to re-enter the outside world as many times as he wants, preparing him for initiation into the secrets of the universe.

Initiation is the stage where the hero gets what he needs to invigorate his community. It is subdivided into: a) The Way of Trials; b) The meeting with the Goddess; c) Woman as Temptation; d) Atonement with the Father; e) Apotheosis and f) The last blessing.

After crossing the threshold, the hero is forced to undergo a series of attempts, which serve as a means of purifying the ego. In these trials, the hero receives assistance from his supernatural helper. Judgments force the hero to put aside any personal considerations on the path to enlightenment.

When the hero has overcome all the barriers of his journey, he is confronted with the Goddess Queen of the world, whom he can marry or reject. He will also meet with his father, realizing that the two are the same. From this point on, it is possible for the hero to be initiated into the final secret of the universe, reaching a perfect divine state.

If not elevated to the status of God himself, the hero can contact and visit the

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Table 1. Comparing Journals

The Heroine's journey	The Hero with a Thousand Faces
Separation from the feminine(Development)	Call to adventure(Departure)
Identification with the masculine	Refusal of the call
The Road of Trials	Supernatural Aid
The Illusory Boon of success(Growth)	The Crossing of the First Threshold
Strong Women can say no	The Belly of the Whale
The Initiation and Descent to the Goddess(Learning)	Road of Trials(Initiation)
Urgent Yerning To Reconnect with the Feminine	The Meeting with the goddess
Healing The Mother/Daughter split	Woman as the Temptress
Finding the Inner Man with Heart	Atonement with the Father
Beyond Duality	Apotheosis, The Ultimate Boon, Refusal of the return(Return), The magic Flight, Rescue from Without , The Crossing of the Return Threshold, Master of the Two Worlds, Freedom to live

kingdom of the Gods. There he can be presented with the elixir of the Gods, the source of his power, or he can steal it or obtain it by illegitimate means.

Having achieved the life goal, the hero must now begin the journey back to share his blessing. The Return is the most important stage, as it ensures the continuous flow of spiritual energy and justifies the withdrawal of the hero from the world.

At this stage the hero returns and re-integrates with society. It is subdivided as follows: a) Refusal to return; b) Magic Flight; c) Redemption; d) Master of the Two Worlds; e) Freedom to live.

After the hero has obtained his blessing, a return to society is necessary. This responsibility can be refused, as an option the hero may wish to remain in the kingdom of the gods for all eternity. If the hero decides to return and the benefit of the gods was given willingly, his journey home is quick and unimpeded.

If the hero won the blessing through some act of cheating, or stole from his guardian, the return to society becomes a scene of persecution interspersed with elements of magical evasion and obstructions. The flight is generally successful and the hero is now free to approach the return limit. The returning hero is faced with several problems, the first of which is how to properly convey what he learned from his time in the divine kingdom.

The second problem is being able to accept the trivialities of everyday life as significant, which can be difficult. The returning hero may also encounter a time gap between the two kingdoms. Commonly, one year in paradise is equal to one hundred years on Earth or vice versa. In some myths, the hero gains mastery by perceiving both worlds and gains the freedom to pass between them at will. Finally, the returning hero comes armed with the perception of the natural order of things.

3. The Heroine's and Hero's Learning Journey

3.1. The Narrative for a Gender Balanced Learning Journey

The heroine's learning journey aims to increase the rate of girls studying in STEM through the use of appropriate language. In addition, we seek to provide greater confidence for the students in relation to study and work in the areas of technology, presenting content that prepares young women for the labor market, through a parallel curricular program to the official classes of science and technology schools, in the format of a course that can give students a motivation to enter the job market with a language suitable for female students, in a course with a part-time format, focused on practical and real life projects.

The curriculum for the proposed online course will be about Machine Learning with mathematics and its narrative is based on the "heroine's journey". By creating a Student Club, girls will be able to connect, exchanging experiences from different countries, but with the ease of sharing the same language. At the end of the experience, students will feel more confident and better prepared to get a career opportunity in the technology sector.

The creation of this course is part of the Fostwom [1] project, Connecting Women and STEM. Its goal is to promote full and equal access for girls and women in STEM.

Our proposal, for girls in the field of STEM education will allow them to build a larger set of self-sufficiency skills, project management principles, access to software development tools, and basics of programming. To achieve this, the girls need to perform an effort to develop a real project that runs as an application, allowing program management and collaborative tasks, developed with each other, increasing their machine learning and math skills and preparing students for the market stimulating the hiring of female talent by technology companies.

The development process is based on problem-based learning and gamification. Our software is an educational plug-in, accessed online, by an application or website (for example, a MOOC) that can integrate other technology support platforms, such as wikis, video editors, project repository and programming codes for create an educational infrastructure.

Our target audience are girls aged 15 to 21, who are repressed in relation to STEM topics, and lack the perspective of working in the area of technology. In this way, they can improve their mathematical skills, specifically in the field of programming, data mining, machine learning and artificial intelligence.

One of the goals of the work is to be a reference transformation on how girls behave and learn, to work in the field of technology, offering intrinsic motivation, self-confidence, a welcoming environment, design, language and usability appropriate for the progress of their educational activities and professional skills.

As short-term results, we have a greater interest among girls in the areas of STEM, loss of fear of programming, mathematics, learning of technical tools and Internet platforms that allow girls to perform their duties with more confidence.

As long-term results we have an increase in girls' skills in mathematics and machine learning, better preparation for job applications, visibility of projects, internship opportunities, greater confidence, a transformation from ordinary girls to heroine's girls, more equality of gender in technology and increased number of women in the labor market, better relationships in Internet technology discussion groups, better relationships with men in the workplace, more complete and independent life.

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[1]https://fostwom.eu/

Figure 2. The Heroic Journey of a Learner in STEM courses
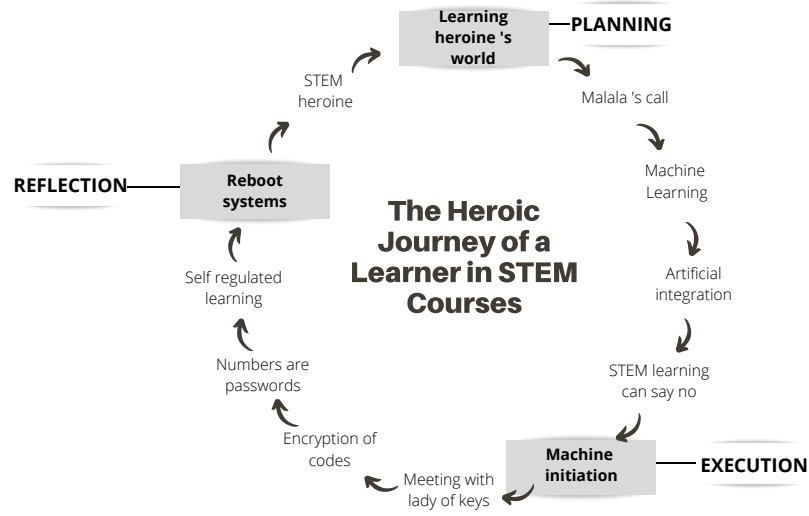
3.2. Discussion of the results

In the book "The Hero with a Thousand Faces", Campbell introduced the concept of Monomyth, which includes the separation, initiation and return of a narrative known as the Hero's Journey, becoming one of the greatest scholars in the field of mythology.

Hartman and Zimberoff make a detailed analysis of the Hero's journey through models of higher development of mythology (Hartman & Zimberoff, 2009). Sonnenburg also write about the paths to the hero's journey (Sonnenburg & Runco, 2017).

We can understand that the adaptation made by Vogler, can be seen as an important contribution, to disseminate this type of approach of the human personality, found in the Hero's Journey, idealized by Joseph Campbell. From its adaptation, it was possible to develop narratives of films with great acceptance in the public. It is worth mentioning that during the analysis of Vogler's work we also found some comments regarding the criticism about the Hero's Journey being a male theory.

Vogler states that it is possible to identify the prevalence of the masculine term during the hero's cycle, due to the fact that many of his theorists were men. Furthermore, Vogler justifies that in his part of the story, he sought to recognize and explore the ways in which women, during their journey, are different from men. Vogler believes that much of the journey is the same for all human beings, since we share many realities of birth, growth and decay, but being a woman clearly imposes different cycles,

Table 2. JourneySteam
The Heroic Journey of a Learner in STEM courses

Learning Heroine's World
Malala's Call
Machine Learning
Artificial Integration
STEM Learners can say no
Machine Initiation
Meeting with Lady of Keys
Encryption of codes
Numbers are passwords
Self Regulated Learning
Reboot System
STEM Heroine

rhythms, pressures and different needs (Vogler, 2007).

In female version, about the journey, we found two authors who identified two important points in our research: The female view and an example of a model, adapted to female universe.

The first point is made by (Frankel, 2010), who states that women have always been present in history and men describing its functioning according to their view of the world. A world view that for women can have another representation, as a search for unknown power and the ability to save humanity or cosmos.

This first point, presented by (Frankel, 2010), reinforces our interest in developing a narrative, contains a feminine vision of Jorney, as a form of motivation for girls.

The second point allow us to create our own model based on (Murdock, 1990) work. Murdoc, in addition to diving into theory, with a feminine view of the journey, presents an adaptation in the form of a model. This model has a different language, containing the universe of women.

In addition to the immersion in the works that were developed, about the journey, in theoretical views, male and female, we also identified that Shelton affirms that the stories support the involvement and increase the learning gains, but do not increase the responsibility. According to the author, in digital environments, stories can involve and support students' learning, making them responsible for performing a task (Shelton, Warren, & Archambault, 2016). On the other hand, Goldstein affirms that the metaphor of the hero's journey for elementary school teachers served positively to all students (Goldstein, 2005).

4. Conclusion and future work

One of the questions that interests us is to encourage students to learn on their own, making a certain effort to obtain results in the subject, together with the support of technological tools, help from the teacher and even with the external help of other specialists.

We analize psychological significance of the Hero's Journey and its derivations, including in the female form (Campbell & Moyers, 1988; Frankel, 2010; Murdock, 1990; Vogler, 2007). The archetype of this journey, known as a journey that involves heroism within each of us, presents a series of challenges until it is proven that the

pretender to be a Hero or Heroine must present his experience in order to become a Hero of your own story.

We understand that for the students' motivation, the Hero's journey narrative, which contains aspects related to rules, challenges, goals, feedback and rewards, can be added to the context of STEM education, working with the feeling of challenges established during certain stages, such as the beginning, middle and end of a goal. Within the Hero's journey approach, the question that arises, for each of us, is the beginning of a journey that contemplates the teaching, the tests, the failures and the reflection, overcoming all the challenges and finally winning the his ultimate goal, in this case to acquire knowledge about new skills and be the hero of himself within an undergraduate discipline. In addition, we argue that, in this article, it is important to explore the field of gender equality in educational narratives.

After the authors' analysis on the theme of the Hero's Journey, we had a brief discussion on this subject.

To materialize the desire to apply gamification in the STEM area, with a language concerned with gender equality, for students, we developed the descriptive section: The Narrative for a Gender Balanced Learning Journey. In this section, we indicate the current state of development of the proposal. After this, we discuss about both visions for the Journey in discussions of the results section.

Our intention, after this theoretical analyze of the foundation of the narrative, as a motivational stimulus for students, is to continue with a publication that will contain the description of our model, adapted from the authors who produced studies regarding the journey and focusing on STEM education for girls. This next publication will also contain the full pedagogical content of the proposed discipline, in this case Machine Learning and mathematics, as well as the software and technologies already developed.

As a future work, we indicate that move on the research and publication, a map of current initiatives on gender equality in the areas of STEM and in the labor market, which will serve as basis for our proposal based on the analysis of the results.

Notes on contributor(s)

An unnumbered section, e.g. `\section*{Notes on contributors}`, may be included *in the non-anonymous version* if required. A photograph may be added if requested.

Nomenclature/Notation

An unnumbered section, e.g. `\section*{Nomenclature}` (or `\section*{Notation}`), may be included if required, before any Notes or References.

Notes

An unnumbered 'Notes' section may be included before the References (if using the `endnotes` package, use the command `\theendnotes` where the notes are to appear, instead of creating a `\section*`).

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