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ORIGINAL ARTICLE

Anticipation of the Impact of Academic Group-Based Projects in University Students' Desired Futures: A Small Case Under Study

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ABSTRACT

This study explores how higher education students perceive their self-efficacy in choosing pleasurable, meaningful and impactful academic group-based projects and in anticipating their professional future, using The Impact Plan, a tool for scenario creation and impact anticipation across five contexts: Learning, Career, Economic, Environmental, and Social. The research employed a qualitative, exploratory approach. Data was collected through a questionnaire administered twice over a four-month period, supplemented by a focus group. Students generally reported high levels of perceived self-efficacy across teamwork, project confidence, and impact anticipation. However, perceived self-efficacy decreased in areas related to personal development and future career anticipation on the second surveyed moment. The research highlights the need for more structured support in personal and career anticipation within CBL contexts, suggesting that integrating anticipation exercises more thoroughly into the curriculum could better prepare students for their uncertain future.

Keywords: Anticipation of impact; Desired futures; Perceived self-efficacy; Higher education; Challenge-based learning; Career.

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INTRODUCTION

University and college students increasingly face significant challenges in envisioning and preparing for their future careers. The transition from academia to professional life is often marked by apprehension, particularly as young adults are expected to navigate through unstable careers in an ever-changing job market, and at a time where uncertainties provoked by artificial intelligence seem to permeate all sectors of specialised work. This research addresses the critical need for effective tools and methodologies that can help students anticipate their careers and make informed decisions about their academic projects so these can become enjoyable and worthwhile for their future.

While Challenge-Based Learning (CBL) has emerged as a valuable framework for experiential inquiry and problem-solving of complex and challenging situations (Rådberg et al., 2020; Nichols et al., 2016), there remains a gap in understanding how students, when working in groups, perceive their ability to choose and orientate engaging projects (expectedly with a certain degree of purpose), by anticipating the future impact these can have. This is particularly relevant when career definition is a personal matter (Savickas, et al., 2012) and team-based work is directed by the interests of many. Furthermore, while scenario-based foresight methods are widely popular, their application in teaching and learning environments is often limited (Stoyanov, 2020) or too abstract for students to effectively engage with.

This study aims at exploring the perceived self-efficacy of scenario creation and impact anticipation in higher education in such contexts. It specifically addresses the following research question: To what extent do higher education students feel able to confidently engage with group-based academic projects and anticipate their professional future?

By examining students' perceived self-efficacy in dimensions related to confidence in the project, teamwork, and future anticipation, this research contributes to the understanding of how educational tools and methodologies can better prepare students for the challenges of the modern workforce. It also offers insights into the potential of anticipatory learning approaches in fostering sustainability-oriented thinking and decision-making among future professionals.

THEORETICAL BACKGROUND

Hora, Benbow & Smolarek (2018) state that the belief that investing in soft skills at higher education (HE) level guarantees a decent job after graduation is common but misleading, since it ignores pertinent issues in hiring such as discrimination and salary stagnation. This means, for HE students to define their possible career paths, they need to envision their future context and, to the best of their possibilities, customise their

leaning journeys accordingly, since the authors add that skills cannot be viewed in a vacuum, but that the context in which learnt dispositions are defined, acquired, and employed is intimately linked to them (Hora, Benbow & Smolarek, 2018). Yet, the world is increasingly VUCA — which stands for Volatile, Uncertain, Complex, and Ambiguous. Such combination of factors brings enormous challenges for individuals and institutions, and it becomes particularly tortuous for young adults who, as they finish their HE journeys, face the world outside academia with justifiable anxiety, where they are expected to operate as autonomous members of society and readily prepared professionals, most likely navigating through "squiggly" careers forever (Tupper & Ellis, 2020) and, as Gedeon (2022, p. 205) mentions, "... ill-prepared for the future of work and citizenship...".

Tackling the world's changes in a systematic way, considering the whole ecosystem rather than focussing on individual and isolated components, can be daunting for most adults, and certainly more challenging for those whose careers have not initiated yet. It is vital to highlight the importance and value of community knowledge and available, local resources, for a sustainable preview of what one's career may entail. Also, asking students to prioritise their own long-term wellbeing, and to take into account future generations, biodiversity and the maintenance of our planet when making decisions, should be at the very core of this future-looking activity (Lelis, 2022).

Particularly helpful for this kind of contextualisation is Challenge-Based Learning (CBL), a teaching and learning (T&L) framework that is based on experiential inquiry and encourages students to identify, analyse, and design solutions to local or global challenges while gaining subject-specific content knowledge (Rådberg et al., 2020; Nichols et al., 2016). In CBL, students, usually working in teams, are expected to collaborate with a variety of stakeholders, pose pertinent questions, gain a deeper understanding of the challenge and its context, accept and overcome obstacles, and then share their experiences. According to Nichols et al. (2016), CBL's first stage includes asking questions on the relevance that the challenge will have on one's life and the world around us. Creating scenarios is the first step toward providing these questions with answers.

Numerous scenarios can be created and investigated by using people's experiences and perspectives as points of departure. Scenario-based foresight aims to strengthen readiness and sensitivity to the future by mapping a range of trajectories, risks, and opportunities (Schwartz, 2012; Schoemaker, 1993). Several methods, such as Delphi and Futures Cone, have been traditionally used in organisational contexts to support this kind of activities, but their application in T&L is either not applicable (because it involves external consultants and takes months) or too abstract, respectively. The Impact Plan (TIP), proposed by Lelis (2022), was designed with individuals and, particularly, HE students in mind. It promotes a constructive and future-led approach based on relatable prompts (*stimuli*), supporting the adoption of an anticipatory notion of uncertainty, where futures are actively envisioned rather than passively predicted (Moesgen, et al., 2023). Anticipation is a condition that is part of all living beings. According to biologist Robert Rosen, an anticipatory system is one able to encode and build models of itself and the surrounding context for the purposes of guidance and control, utilising those models to change behaviour in the present according to foreseen future events or conditions (Rosen, 2009). As living beings, humans have an advantage: their capacity for learning and model building, which can be used to self-benefit and to the betterment of humanity and biodiversity. TIP is a heuristic for the rapid assessment of a project/challenge's possible short, medium and long-term impact, grounded on surfacing desired identities and sustainability-oriented ambitions underpinned by three factors: projects must lead to 1) pleasurable moments and 2) meaningful opportunities for the self, and to 3) positive impact at humanity level (Lelis, 2022). It does so by matching the project/challenge's anticipated impact with the motivations, capacities, ambitions, and perceptions of value of those involved in its execution, making them aware that they can, to some extent, contribute to a better own life and a better world. For that, five contexts for scenario creation (parts of a model of self in the future) are to be considered: Learning, Career, Economic, Environmental and Social. Then, interrelations between them are to be surfaced, so the individual (or team) can anticipate the potential obstacles, risks and hindering elements of the project/challenge, so they can plan and make decisions accordingly, in a conscious and useful way (Lelis, 2022).

This takes us to the concept of perceived self-efficacy, first proposed by Bandura in 1977. It concerns an individual's beliefs in their capabilities to attain certain objectives, and it acknowledges that all individuals are different in what they can do and achieve (Bandura 2006). Other researchers indicate that self-efficacy has a significant impact on both profession choice and HE studies' achievement: confident students are more likely to pursue and finish challenging programs and further education, as well as to consider a greater variety of careers (Greco, et al., 2022; Lent, Brown and Hackett, 1994; Multon, Brown & Lent, 1991).

In this sense, it became relevant to understand to what extent HE students feel able to 1) confidently choose the most engaging (pleasurable, meaningful and impactful) academic projects, and 2) anticipate the future, namely when it involves planning their individual professional future in a context (CBL) where projects are usually undertaken in group, rather than solo.

METHOD AND DATA

This is a qualitative, exploratory research, carried out during the first semester of the first (taught) year (level 6) of the MA Web Communication and Technologies, taught at the University of Aveiro, in Portugal, in late 2023. Specifically, the context under exploration, which determines the case under study, was a communication design subject unit, part of said postgraduate course. The number of enrolled and participating students was N=25. About half of them knew each other (due to continuity of studies from their undergraduate programmes), the other half were totally new to the department and even to the University of Aveiro. Over the course of the first week of the semester (in mid-September 2023), students were randomly organised in five teams, after which they received, from the course's external partner, the brief with a broad challenge: the optimisation of e-commerce. Towards the end of the academic year (in June 2024) each team would have to deliver a fully-fledged and go-to-market web-based solution, which would be worked on in eight out of the 10 subject units taught within the first year of this MA.

Within the communication design subject unit, students would have one hour of theory followed by a two-hour workshop every week, for 14 weeks. On week 2 they were introduced to the *Ikigai* and experimented multiple scenarios creation. Ikigai (/ˈɪkɪgʌɪ/) is a Japanese term that combines the words *gai* (meaning *worthwhile* or *benefit*) and *iki* (meaning *life*). The combination of these concepts might be interpreted as the thing that gives your life purpose or value. Students were asked to do this by following García and Miralles's (2020) model which allows individuals to find their passion, profession, vocation, and mission. On week 3 they transferred each team's three most desirable potential concretisations of the challenge to TIP, and on week 4 they reached a decision towards selecting the most favourable one, being able to propose a How-Might-We research question. They were told that out of the TIP five contexts for scenario creation, Learning and Career would have to be completed individually, as part of their extra-class activities. This means in-class exercises promoted the anticipation of impact of the selected scenarios around the Economic, Environmental and Social contexts (Figure 1), since it is easier to instil discussion on global topics that are of concern to all. The following classes, and up until the end of the semester, would be used for research, ideation and prototyping possible solutions.

Fig. 1. One of the teams analysing their results on TIP's Economic, Environmental and Social contexts against the 17 Sustainable Development Goals by the United Nations.

Empirical data was collected through one questionnaire administered twice, first immediately after the anticipation activities (on week 4), and then before the beginning of semester 2, with a four-months interval in between, when groups' solutions would be at hi-fi prototyping level. The questionnaire employed a self-efficacy scale that was constructed following Bandura's guidelines (2006), but also influenced by the New General Self-Efficacy Scale (Chen, Gully & Eden, 2001), the Career Decision Self-Efficacy Scale (Betz & Taylor, 1994) and the Leadership/Teamwork Self-Efficacy Scale (Chemers, *et al*., 2011; Deemer, Sharma & Xu, 2022).

Construct validity was performed with a pilot involving six bachelor students (level 5). As in all other consulted self-efficacy scales, a Likert scale was adopted. However, the most common type uses a 5-point range and is analysed quantitatively but, since the number of participants was low, and this research aims to identify patterns and understand deeper meanings for insights — rather than yielding statistical summaries — the produced scale used a 9-point range to increase precision and reliability in the results. Questions, in a total of 17 items (Appendix 1), were linked to behavioural factors over which students could exercise some control considering three main dimensions: teamwork and leadership, confidence in the challenge/project, and anticipation of its impact. After the questionnaire's second round, seven students were happy to gather in a focus group session, where some of the questionnaire's obtained results were clarified.

RESULTS

All 25 students took part of activities on weeks 2 to 4. All of them got involved on working out their own *Ikigai*, and all 25 actively engaged in the anticipation of impact of their three selected possible concretisations of

the challenge, analysing the sustainability-oriented contexts of TIP (Economic, Environmental and Social). However, only five reported having completed the individual ones (Learning and Career) at home, whilst the remainder said they "just scanned" these over. Out of the 25 participating students, only 21 completed both rounds of the questionnaire, which means 21 answers were ultimately considered for this study.

Globally, the pattern identified is that students perceive themselves at a high level of efficacy (in average, around point 7) in all three dimensions (teamwork and leadership, confidence in the challenge/project, and anticipation of its impact), in both rounds, with a slight increase on the second one. In fact, the majority of students expressed a positive variation (i.e. an increase in their perceived self-efficacy) from the first round to the second in about nine of the items/questions, and only six students experienced a decrease in their perceived self-efficacy.

Perceived self-efficacy increased between the first and the second round of the questionnaire in 12 items, with the following 5 as the most expressive:

(i) being able to express own views freely whilst working in group;
(ii) being able to influence the orientation of a group project;
(iii) being able to get through the most difficult moments within own project team;
(iv) being able to overcome the influence of adverse project-related conditions;
(v) being able to anticipate how a challenge contributes to a sustainable future (at the economic, social and environmental levels).

Similarly, perceived self-efficacy decreased between the first and the second round in five items:

(i) being able to promote cohesion and fairness in a group project;
(ii) being able to keep team colleagues on task and focused;
(iii) being able to explain own project to external stakeholders (such as potential employers);
(iv) being able to anticipate how a challenge contributes to own personal development;
(v) being able to anticipate how a challenge contributes to own future career.

The latter was the item leading to a greater discrepancy between the two rounds, with most students manifesting a high perceived self-efficacy regarding foreseeing their future professional path on the first round and an expressive decrease on the second one.

Due to the discussive nature of the results of the focus group, these will be presented in the following section.

DISCUSSION AND CONCLUSIONS

The results obtained on week 4 with the first round of the implemented questionnaire were promising in the sense that this group of students, who had recently graduated from their diverse bachelor's degrees, and had just initiated their postgraduate course, without any professional experience in the field, perceived themselves as highly competent regarding the dimensions under analysis. However, on week 11 two students from one of the groups (of five members) developed an incompatible relationship, and another two (from the same team) followed these within days. The completion of work was increasingly arduous and, ultimately, the course leadership dissolved the group and distributed its members through the other four teams.

Bandura (2006) explains that perceived self-efficacy is influenced by diverse factors such as one's own drive, thought processes, degree of performance, emotional states, or even the context around us. The fact that the students directly involved in this unfortunate group had to experience such a complex situation, and that all other students, from all other teams, had to absorb elements who, by then, had had zero contribution to their project, may explain, if not totally at least partially, the obtained results, namely the perceived self-efficacy decrease. It is also known that experiential modes (such as mood and intuition) operate as antecedents to imagination (Stephan, 2019), which means if students' disposition is not at its best, their capacity to imagine a brighter future is negatively affected. Considering the aforementioned, and the fact that the contexts of impact Learning and Career of TIP, inherently personal, were not accompanied in the classroom, it comes as no surprise that perceived self-efficacy decreased in the previously listed five items.

Moreover, students who participated in the focus group expressed some additional ideas, transcribed verbatim:

- "It was a mess [referring to the dismantled group]. They wouldn't speak to each other nor answer each other's messages, like, and then we had one of them joining our team, but she knew nothing about our project, our identity, our ambition... she was just pretending that she did. If this is what I'm gonna get in industry... I mean, does this kind of s*** happen in industry?" — Students' self-efficacy in defining future careers may have been affected by the difficult (but not uncommon) human relationship situation they experienced during the semester. This may either signify a certain degree of naivety or a different standard of expectations in what being part of a team currently entails. Regardless, knowing how to be a part of a team and move forwards together with others, defending the team's cause, is a competence necessary in the real world of employment.
- "I would have liked to have more time with The Impact Plan. I actually think we should have worked on the Learning and Career stimuli twice: once at the beginning of the semester, to help us

choose the project/challenge that would best align to our needs and preferences, and then when the semester was over, to check how much we learned and grew up in our capacity to define our careers." — A lot happens during such an intensive and demanding T&L approach such as CBL and the new contents, new lecturers, new established contacts, new course colleagues, and new school practices are part of this learning, influencing individuals, potentially redefining the way they foresee their future selves as professionals.

- "This was so crazily intense! The lack of time to properly think due to the overload imposed on almost every single subject unit was terrifying. And yet, I think I liked the fact that everything was interconnected [in reference to CBL]. A unique project with a single external partner in all subject units concentrates our efforts. And I feel we achieved something quite feasible. It could actually become a real app." — When individuals have no time to think, they will hardly have time to imagine and put their conscious anticipatory systems at work. A CBL approach can be, in fact, intensive, and some subject units may need to redefine their learning outcomes and assessment, possibly giving students opportunities to reflect more on how each of their achievements contributes to their idea of future careers, either the original or the newly formed ones, as they progress and develop new knowledge. Moreover, the anticipation exercise as part of TIP was demanding because it involved anticipating for the self and for the still unknown others (as mentioned, half of the cohort did not know any of their peers). However, as mentioned by the students, the concentration of efforts was evident and the external partner, happy with the results, selected three students for an academic traineeship over their final master's taught year.

A few limitations ought to be listed, most of which will lead to future research directions. The group dismantling and its elements being distributed through the remaining teams caused some disruption in this study as well. In fact, four students became less involved toward the end of the semester and did not participate neither in the final classes and presentations, or in the second round of the questionnaire. Then, this study was performed with a rather small group of students enrolled in a specific area of studies. This means it is hard to surface meaningful patterns or replicable themes. It would be interesting to run such exploration, simultaneously, with other cohorts from other courses at the same level, hence allowing for a comparative study. It would also be interesting to look at results from a longitudinal perspective, implementing the study throughout a few sequential years to highlight any potential evolution/change in mindsets or even preferences in regard to both happiness and life design (Dolan, 2015). Finally, the proposed and used 17-items scale (Appendix 1) should be thoroughly validated for quantitative research purposes, since in this study the quantitative aspect of the Likert scale was underutilised. It would also mean the above identified future research avenues can be implemented and replicated with increased objectivity, which would expectedly lead to statistical significance, reliability and generalisation of findings. Advancements in the proposed scale could well lead to either or both the "Anticipation of Impact Self-Efficacy Scale" and the "Project Engagement Self-Efficacy Scale".

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SUPPLEMENTARY MATERIALS

Appendix 1 containing the 17-items scale used in this research is provided as an additional file.

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