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Mindel van de Laar*, Katerina N. Triantos** and Lutz F. Krebs***

*   Corresponding author. Maastricht Graduate School of Governance, Maastricht University, Maastricht, Netherlands, and UNU-MERIT, Maastricht, Netherlands. Email Mindel.vandelaar@maastrichtuniversity.nl

**   M Powered Strategies, Washington, DC

***   Maastricht Graduate School of Governance, Maastricht University, Maastricht, Netherlands, and UNU-MERIT, Maastricht, Netherlands.

Dr. Mindel van de Laar is the programme director of the dual career PhD programme in Governance and Policy Analysis (GPAC2 offered jointly by United Nations University and Maastricht University. In addition, she manages a selection of online and blended learning research and training projects, including the Evidence-Based Policy Research Methods (EPRM) course, The SMART Choices and SMART Tools project and the Community of Learning for Africa project (COLA). ORCID ID: 0000-0003-4028-9630

Katerina N. Triantos is a consultant with M Powered Strategies, who has coordinated the creation and implementation of the SMART Choices and SMART Tools online education project material at UNU-MERIT/ Maastricht Graduate School of Governance.

Dr. Lutz F. Krebs is the former academic programme director for the M.Sc. programme in Public Policy and Human Development used as a case study here. He has served as academic advisor since 2010 at University College Maastricht and in the MPP. ORCID ID: 0000-0003-0451-7835

Abstract:

Academic advising and perceived agency in study choices often lead students to assembling a more suitable curriculum and ultimately lead to better learning outcomes. This paper argues that helping students sample the experience of upcoming education units can support traditional academic advising and assist students in critical reflection when picking electives.

We examine how online previews of upcoming courses offered in addition to information and advising supports students in making smart choices. Students were surveyed both before and after reviewing online course excerpts. Data was supplemented with feedback by advisors and compared with previous cohorts lacking the online component. Findings indicate students used the material to test initial plans and assumptions and became more critical in making their track selection.

Keywords: academic advising; self-directed learning; higher education; blended learning

JEL Classification: I21-I23

Declarations

1.   Introduction

In the current higher education environment, students face pressure to complete their educational track faster, with higher grades and—if possible—with extracurricular activities as well. Funding for education is limited, requiring many students to fund their studies by means of study loans. As those have to be repaid during the active labour market career, it is essential that students not only choose an educational programme that they are able to complete within the expected period, but one that also leads to good employment opportunities after graduation. This is not a trivial choice, as students have to pick electives and tracks with a developing but imperfect understanding of the labour market. Not surprisingly, educational programs want to assist students in making choices that lead to strategically-sound decisions, timely graduation and good career prospects.

Programs offering a choice of tracks or individual electives generally provide course descriptions in the form of catalogues, and through information sessions during the choice period. Ideally, these are augmented with academic advising sessions that provide an opportunity for students to present their goals and review the alternative study choices with an advisor, coach or mentor. Such discussions turn the choice moment into a two-way conversation and trained advisors can stimulate critical reflection by challenging the student's assumptions, encouraging additional information discovery, and providing their own insights.

But even with a well-designed advising component, two bottlenecks remain: even a well-informed discussion imperfectly represents the student experience of going through the courses they are choosing, and in programs with a sufficiently diverse choice, individual advisors are unlikely to have the same level of insight into all the choices available to the students.

This paper proposes that course information and academic advising can be usefully augmented by giving the students the opportunity to sample the courses before making their choice. We review the design and outcome of an open education project that aims to offer students a taste of their upcoming educational choices. We created open-access information packages for six tracks of 24 electives in a graduate-degree programme in public policy at a Dutch public university. Each package augments information on its electives and the related labour market options, and adds an opportunity to experience the start of each elective with a short lecture-style presentation, readings and a self-assessment. Using a blended-learning approach, the packages were made available to all students online during the orientation period before they had to register their tracks and electives. The ultimate goal is to encourage critical reflection during the choice period and a better student-curriculum match.

Section two of this paper provides a brief overview of the literature with emphasis on blended learning. Section three describes the graduate degree programme that serves as our test case, along with the goals and purposes of the open educational project. Section four presents our findings based on data from a pre and post qualitative student survey, quantitative learning analytics from the electronic learning platform and administrative programme data. Section five then concludes with the results of the first year of project use, its usefulness and it offers broader learning perspectives and next steps.

2.   Literature review

Academic advising is used as a strategy to attain higher levels of student academic success within universities. On average, centralised academic advising increases student retention (Robbins et al. 2009), results in higher grades and stimulates social and academic integration within undergraduate programs (Kot 2014). Iatrellis et al. (2018) find that additional information and guidance provided during advising encourage students to further personalise their learning trajectory and pursue learning paths not previously considered by the curriculum developers.

Traditionally, academic advising at the tertiary level is primarily conducted within general, undergraduate student populations. However, advising can be directed toward more targeted student groups, based on varied practical requirements. There has been limited research within academic advising of graduate-level students. The research that has been done has particularly focuses on doctoral programs, with emphasis on the role of academic advising in matching students with a given academic programme (Golde 1998; Hoskins and Goldberg 2005; Nerad and Miller 1996). Hoskins and Goldberg (2005) find that the main concern doctoral students have is that their given programme does not meet their needs or expectations. As graduate students are more specialised compared to undergraduate students, there should be more focus on understanding the expectations of prospective students and conveying the programme's content and aims with them. If students have a better understanding of a programme's content prior to enrolment, they would be better prepared to select the programme that suits them best and programme retention rates may then increase (Hoskins and Goldberg 2005). We know that timing of information sharing is essential. As Babad (2001) indicates, decision making within a study is a sequential process, and

throughout the study decision process students make smaller and bigger choices, that are often interrelated. Students base their choices on student characteristics, teacher and class characteristics, type and sources of information available and the context in which the decision is taken. That means that timing of a choice is essential, and students will base their choices on different information sources, that are available to them at various points in time. As Babad (2001) highlights, students choose their first course in a study largely based on topic interest and expertise of a teacher – seeking a good match towards their interest and seeking high quality education. In the last course of their programmes, convenience arguments gain importance. Students will consider more carefully if the timing of a course fits their schedules, choose for courses with assignments that are known to be easy or courses resulting in grades that are known to be high – as such increasing chances of passing a course. That would imply that coming in, students rely on what they already know, and as time passes reality becomes more important and practical decisions may receive higher weight than content interest.

Taking into account this need for practical information, educational institutions may therefore choose to provide information that is aimed to better advise students, beyond content to include also workload and information on potential jobs. If earlier choices can be based on more realistic expectations, potentially later on students may not be faced with the need to make convenience choices.

However, access to advising material does not mean that the material is always used in constructive ways. We know that information must be presented in an engaging way, which may vary depending on the communication channel (De George and Walker 2010), and students must be willing to invest time in accessing and abstracting from the information. Students vary in their ability to direct their own learning. Self-directed learning is "the process of deciding what to learn to what depth and breadth […]; it occurs in a social context and includes decision-making and metacognition thinking" (Hendry and Ginns 2009, p. 918). For self-directed learning to occur, a person is required to undertake deliberate decision-making and reflection, where various points are considered, in which the person freely reaches a decision (Babad 2001; Hendricson et al. 2006; Kahneman 2011). The ability to self-direct learning is associated with the ability to critically self-evaluate, learn self-efficacy, and effectively organise learning, but it is also connected to self-determination, -control, and -management (Kassab Al-Shafei, Salem, and Otoom 2015).[1] Self-directing learning can be useful when making important study choice decisions.. Examples are prospective students' choice of BA or MSc study, the choice of courses within such programs, or the choice of internship periods or specialisations. While these choices are crucial for the further educational track of students, making informed decisions based on objective criteria is not always done. Undergraduate students are found to seek shortcuts to reduce the effort of selecting which courses to focus their studies on; salient course characteristics would often overshadow other information that would have led to a more comprehensive decision (Babad 2001). In addition to academic preference, students also have individual preferences and traits. As such, students have to not only weigh academic considerations such as topical, assessment, and instructor information, but also personal considerations and career prospects (Babad and Tayeb 2003; Maringe 2006).

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[1] The ability of a student to self-direct his or her own learning is found to not associated with his or her level of academic achievement (Kassab et al., 2015). Students who have equal levels of academic achievement, yet lower self-directed learning skill levels, are placed at a disadvantage when important career decisions are taken. Yet, Kassab and colleagues (2015) observe that self-directed learning is not a fixed trait; students can improve their ability to make better choices through effective teaching and learning environments. Differences in student abilities in directing their learning can be compensated for by providing the students with decision-making support.

Self-directed learning implies that information is available to students to help the decision-making process, for example by means of face-to-face sessions, written materials or online sharing. Traditionally, information has been shared with students in class instruction sessions or instruction manuals. Recently, online educational forms have been added to this tablet of options along with any combination of those forms. Traditional face-to-face and online instruction has resulted in a blended learning environment. Adding an online component to education is found to offer students the autonomy to learn based on individual needs (de George-Walker and Keeffe 2010). Particularly, students who struggle academically and are in danger of failing or dropping out were found to benefit from targeted support before commencing a given study programme (Hughes 2007). In particular, 'at risk' students' retention and course submission rates increase with this form of academic support (Hughes 2007).

Blended learning is found to optimise achievement when correct learning technologies, learning styles, skills, audience, and timeframe are utilised (Singh and Reed 2001). When designed with these considerations in mind, blended learning allows teachers to rely on online components to disseminate educational material, freeing up their in-person time to provide support and facilitate learning (Hughes 2007). Castro et al. (2019) outline a number of specific benefits of online learning —rich media, high flexibility, and the ability to provide quick diagnostic feedback on the basis of online testing — that enhance the value of personalised and face-to-face advising. The online component of blended learning may also specifically increase cognitive learning (Downing, Kwong, Chan, Lam, and Downing 2009; Turula 2018). By creating a blended learning setting, students are given space to reflect on and progress their thinking. However, the addition of online components increases education material and possibilities, which may add to 'at risk' students' feeling of being overwhelmed or excluded (de George-Walker and Keeffe 2010).

Furthermore, the literature stresses that blended learning is only beneficial when particular aspects of any given course are taken under consideration. Learning does not necessarily increase when educational material is simply moved from in-person to online formats. Yet to date, there has been little evidence on how the addition of online education, to create a blended learning environment, can act as an advising mechanism for students who must self-direct their studies. Only Jones (2018) discusses the role of learning analytics in supporting advising in a higher-education context. One of his key take-aways — the presence of more extensive statistics would make advising less personal through "contextual suppression" — does not address the use of a blended environment to stimulate student learning and successively enrich the advising experience.

3.   Materials and methods

3.1   *Case study*

The Master's programme in Public Policy and Human Development (MPP) is jointly offered by a Dutch public university—Maastricht University—and the Dutch branch of the United Nations University. The programme attracts 120–140 students annually from several dozen origin countries. The majority of students have followed a Bachelor programme in a field other than policy prior to joining this programme, though a large minority also have some years of policy-relevant work experience.

The twelve-month full-time study includes an elective specialisation track in the second semester: students can select from six pre-defined tracks of four courses each, or create a custom set of four courses

from multiple specialisations. Participants make this choice in the middle of the first semester. This Master's programme presents a useful test case for the blended learning approach to providing academic advising, as the choice comes very early in the curriculum. This forces students to make the decision when they are still relatively recent entrants in the field. Yet, the choice of which specialisation track to focus their studies on has a substantial influence on post-graduation career options and choices.

In previous years, students have had access to a brochure describing the specialisation tracks and several in-person events. For example, an annual specialisation information event, set up as a series of presentations with Q&A has been held, where specialisation coordinators present their respective tracks. In addition, students could set up personal advising meeting with specialisation coordinators.

In 2017/18, the SMART Choices and SMART Tools project, selected by SURF[2] and funded by the Dutch Ministry of Education, Culture and Science, was added to the above listed modes of specialisation information dissemination. This project aims at exploring the benefits of providing more detailed, on-demand information during the specialisation choice period. The test cohort – cohort 2017 - was given access to supplemental online material about each specialisation. The online content for each specialisation included videos, presentation slides, manuals, readings, quizzes, alumni testimonials, and discussion boards with tutor support. Students were not required to review this online material, and they still had access to the original material that previous cohorts were given to aid there track selection process.

3.2   Data collection

The following data were collected in order to estimate the impact of the additional online material made available to the students for the 2017/18 cohort.

(1) **Programme-level intake survey.** Programme entry survey among all incoming students, allowing students to indicate which specialisation they there interested in at the moment of admission. Data is available for the test cohort and the two preceding cohorts with identical sets of specialisation tracks.

(2) **Learning analytics.** Usage information of the relevant online material collected by the BlackBoard learning analytics module installed on the university-wide learning management system (LMS). This data shows with which project material students engaged for all students using the LMS.

(3) **Ex-ante project survey.** Survey circulated among the entire test cohort prior to their access to the online material, gathering data on how students anticipate using the additional information, the specialisation tracks students were considering and their satisfaction level with having access to the new material. Complete responses were received for 38 percent of the cohort.

(4) **Ex-post project survey.** Survey circulated among the entire test cohort after completion of the specialisation choice period, collecting information on how the SMART Choices content was used, along with its contribution to student track selection. Complete responses were received for 25 percent of the cohort. We were able to match ex-post responses to 45 percent of the responses of the ex-ante survey.

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[2] SURF (2017) Open and Online Incentive Scheme. https://www.surf.nl/en/innovationprojects/customised-education/online-and-blended-education/open-and-online-incentive-scheme/

(5) **Programme-level specialisation choice survey.** Survey circulated among the entire cohort measuring the set of tracks that were considered by students just prior to making their choice, the difficulty they faced in making the choice, and the level of certainty they felt in their final choice. Data is available for the test cohort (58 percent coverage) and a preceding cohort with an identical set of specialisation tracks (2015/16, 49 percent coverage).

(6) **Track adviser experience:** During the track selection, each cohort is given the opportunity to schedule advising meetings with the programme director and/or specialisation coordinators. The anecdotal advising experience between the baseline and experimental cohorts was collected.

(7) **Demographics.** Basic information on gender, world-region of origin, and age, binned to prevent de-anonymisation.

A data protection officer from the programme combined the different data sources and anonymised the resulting data set for our use.

The matched data indicates how student preferences change during the track selection process, for the test and comparison cohorts. It also indicates how the test cohort engaged with the material, and enables us to see how their perception of the choice differed vis-à-vis a comparison cohort choosing among the same set of options. The surveys reveal how students perceive their choice and the newly available material. Coverage is complete for administrative and learning analytics data, and nearly complete for admissions data. Surveys were always circulated among the entire cohort, but faced potential non-response bias due to response rates ranging between 16 and 36 percent. The population who submitted the survey were not significantly different from the cohort population in terms of gender, regional origin or age distribution.

4. Results

The purpose of providing additional online material blended with the existing in-person events is to provide more in-depth information to the students and, ultimately, to enable students to make more informed choices. Our results discuss student engagement with the additional material, and its influence on student choice.

4.1 Student use

The content of SMART Choices is designed in open online format, and embedded into the university-wide LMS ("student portal") that all students use frequently to access course material, submit their assignments and exchange information. The material was freely accessible from any location with internet access during the two-week period prior to the course choice deadline. We did not expect all students to access the material, and we anticipated a higher share of students to review the general track-level material than the detailed course-level material.

Usage Result 1: Engagement

Using learning analytics built into the university-wide LMS ("student portal"), we found that 73 percent of student population who entered SMART Choice's LMS clicked into track material.[3] All the students who click into the track material also clicked into all six specialisation tracks at least once. However, based on the post-survey responses, in which students were asked how many specialisations they reviewed through SMART Choices, respondents indicated they reviewed 2-3 specialisation tracks on average (mean=2.71 track), investing on average 1–3 hours per specialisation. Therefore, although the students clicked into all tracks using the LMS, they felt they engaged with and reviewed fewer specialisations. The level of student engagement with the material is noteworthy given that this was additional material provided for an existing choice procedure that already included written information, presentations with Q&A and individual on-demand advising sessions. We attribute the level of engagement to the ease with which students could review the material and the additional, deeper level of course-specific information available through the project.

Usage Result 2: Satisfaction

Students reported substantial satisfaction with the additional material. In the ex-ante project survey, 89 percent of respondents valued the availability of SMART Choices. 73 percent of respondents indicated that they had used the material in their track choice, and 63 percent of respondents considered the material an important factor in their final decision. According to the independent programme-level survey conducted after the specialisation choice had been completed, almost 12 percent of respondents considered the online material to be the most useful component in making their choice, ahead of in-person advising sessions, peers, alumni, and general events and material. We consider the reported satisfaction as confirmation that the test cohort found the available material useful enough to include in making their choice, and that students were able to use the SMART Choice's LMS system without any substantial technical usability issues.

Usage Result 3: Motivation

Finally, we examined the motivation for students to engage with the additional material. Respondents emphasised wanting to use SMART Choices to verify their current top specialisation choice. They cited reasons such as personal interest in the field (60 percent) and topical alignment with their background (18 percent), along with practical considerations such as prospective career opportunities (33 percent) and skill-set building (28 percent). Relatively fewer students cited an exploratory approach to using SMART Choices, in which they aimed to review a specialisation because of growing curiosity (10 percent) or doubt between which specialisation to select (5 percent). This finding serves as a check that students tend to be driven by realistic motivations when engaging with the material (Table 1).

Table 1: Ex-ante self-reported motivation for engagement with SMART Choice

Motivation for engagement with Smart Choices	Share

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[3] Nota bene: clicking into certain material does not necessarily indicate that a student has reviewed the material in-depth.

Interest in professional field	60%
Career opportunities	33%
Building a skill-set	28%
Alignment with personal background	18%
Curiosity	10%
Doubt/uncertainty	5%

4.2   Student choice

In terms of the students' workflow, we assumed that students would review the additional online material in the period between the initial introductory event and any one-on-one meetings with academic advisors. The more detailed material could contribute to more informed discussions with advisors. We anticipated that the additional information available to the test cohort and the desired interaction effect with the advising conversations ultimately would lead to students making more informed choices and being more certain of their choice once made

Choice Result 1: Perceived Certainty and Difficulty

After selecting a track, students of the baseline cohort (2015/16) and the experimental cohort (2017/18) were asked questions related to their level of security in their track selection. Responses to the question "How difficult was the specialisation choice?" suggest that the number of students who experienced the choice as "very easy" or "easy" dropped (2015: 41 percent, 2017: 34 percent). Furthermore, the number of students who responded "I intend to stick with my choice" when asked about the likelihood of revising their freshly-made decision went down (from 81 percent in 2015 to 73 percent in 2017). The changes for neither of these questions is significant in a Mann-Whitney U test due to the relatively small number of responses, but the direction of the trend at least suggests that availability of SMART Choice material has made the choice more difficult and the outcome less certain to the students.

Choice Result 2: Number of Specialisations Considered

The increase in perceived difficulty and the decrease in perceived certainty are both interesting in relation to the number of specialisation tracks that students listed in response to the question which tracks they were considering seriously. Whereas in 2015, the median student considered two specialisation tracks, the median student considered only one track seriously in 2017. The share of students who considered at least two tracks seriously dropped from 70 percent in 2015 to 62 percent in 2017. Nonetheless, students ended up combining specialisations more frequently than before, with the programme reporting a 50 percent increase in the number of free elective tracks in comparison to the previous record-holding year.

Choice Result 3: Quality of in-person discussions

The final result comes from the observation of the in-person academic advisors, all of whom are experts for their relevant tracks and most of whom have been providing academic advising for many of years. As the programme director reports,

> *"...students were substantially more informed when participating in the meetings. This is not just limited to information retention — though we have had to explain the contents of individual specialisation tracks on notably fewer occasions. It primarily concerns the level of reflection students have undergone before attending the meeting".*

This finding was confirmed by a track coordinator who also served as an advisor, indicating

> *"Two of my students [...] mentioned that SMART Choices videos helped them to decide on selecting the [...] track. They told me the videos were direct, to the point, clear, easy to understand, tidy. I had 2-3 follow-up questions, yet they were actually more in-depth questions, e.g. exact names of the methods, info on why these methods are useful etc. after watching the videos".*

In addition, the reflections by the advisors confirmed that the materials increased awareness of choice. The programme director states

> *"..., students have gotten far more creative in their choice. This is most visible in the number of students foregoing a pre-defined specialisation track in favour of a free elective of their own design".*

Because if the increased awareness, track advisors also appreciate the material and indicate willingness to contribute.

> *"I feel good about making the courses for the use of the students, so I receive more to-the-point questions. A good deal of basics, fundamentals, features are already covered in videos. Then meetings become more effective, productive".*

In combination, these results seem to indicate that the use of blended learning has indeed encouraged students to inform themselves more substantially about the choice ahead of them. Both the ease with which they made the choice and perceived certainty that it will not need modification in the future have not increased. This can be an encouraging sign in that a deeper reflection may have led to a more realistic assessment. The higher share of students that created a custom curriculum for themselves would fit this narrative. In future research, we intend to analyse whether students had a higher likelihood of sticking with their choice as a result of the additional input.

5.   Discussion

Through the results, we found that the MPP students appreciated the idea of having SMART Choices' online material to support their track selection process. They also appreciated SMART Choices' actual material. After reviewing the material, students considered it to be a good tool in helping their track decision-making process. These observations are in line with literature on academic advising in higher education, which find advising increases student satisfaction (Kot 2014), and the importance of student-programme matching in graduate programs (Golde 1998; Hoskins and Goldberg 2005; Nerad and Miller 1996). As expected, some students reviewed the SMART Choices material more shallowly or more deeply,

as evidenced by the number of specialisations and the types of content reviewed (e.g. videos, documents, forums, and quizzes).

Students decided to use SMART Choices primarily to verify their track choice, rather than reviewing the material out of doubt or initial curiosity about a specialisation This pattern of choice is in line with decision-making literature. With limited resources, such as time and the capacity to absorb information, people sometimes take quicker, time-saving approaches (Kahneman 2011). This finding does not necessarily mean that the students made the best track decision by simply verifying what track to select with SMART Choices rather than exploring other track options. However, given that the students were constrained by only having two weeks to absorb the SMART Choices content prior to making their decision and by not being required to review the content, it is reasonable to presume that they chose to review those tracks they that felt they had a higher chance of selecting.

Given that the students primarily used SMART Choices to verify their track selection and they had more high-quality conversations with advisors, we expected the students to be more secure in their track selection. However, they were on average less secure in this decision. In comparison to the baseline, the test cohort generally found the decision more difficult and felt they were more likely to later switch to another track if their selection did not meet expectations. This insecurity in selection would be concerning if the additional SMART Choices information made students feel overwhelmed and, in turn, disengaged (de George-Walker and Keeffe 2010). In this scenario, students would be overburdened and not benefit from the additional information. However, the findings indicate that SMART Choices supported students in becoming more aware of what the track decision entailed, and more informed as to the importance of their selection. In essence, we interpret this not as an increase in insecurity, but a shift of insecurity forward in time. Having a taste of the upcoming experience seemingly enabled students to be identify potential mismatches between their goals and the available courses before committing to a track or set of electives. It has also increased their willingness to switch tracks in the future, if the selected electives did not meet expectations. This increase in critical reflection matches with the reports from advisors that they received more in-depth and higher quality questions from the students when they were making their track selection. Furthermore, more students assembled a custom combination of electives instead of a prescribed specialisation track, which would indicate that students have been better able to identify individual track components that do not match their goals and have purposefully replaced them with better fitting alternatives.

We have argued that we can improve on student choice by going beyond traditional methods of informing students prior to choosing electives or tracks. Course catalogues and presentation sessions will inform students of the overall learning objectives and topics contained, but do not capture the learning experience itself. Academic advising stimulates critical reflection, but is improved by more informed students. The addition of a blended-learning approach that allows students to sample the courses they are choosing can avoid mismatched expectations and reduce the cost of students correcting a sub-optimal course choice ex post through course changes or study delay.

While SMART Choices requires up-front investment in creating and hosting the material, it can end up saving time during the choice stage — advisors spent less time covering basic information if the students have gone through SMART Choices —, avoid incorrect course choices and hopefully contribute to high on-time graduation.

Extending past the results of this paper, we encourage research on such projects' effects on educational outcomes, such as grades, student retention, graduation dates, and programme or course switching behaviour.

5.1   Postscript in reflection of the changes caused by the Covid-19 pandemic

This project was conducted well before the onset of the Covid-19 pandemic. However, the first impressions of a sudden and unplanned shift towards online-only education suggest that SMART Choices has a meaningful contribution to make. Firstly, the sudden distancing and isolation make dedicating time to provide personalised advice to each individual student more valuable. The lack of opportunities to mingle and pursue *ad hoc* conversations with instructors and classmates cute students off from other sources of advice and orientation. Secondly, the stresses of switching to a different educational format and of teaching in a new environment cost teaching staff substantial extra time. A system like SMART Choices that provides students with an on-ramp of readily accessible information and enables more informed advising conversations can help students get useful insight while reducing the amount of time staff has to spend on reiterating basic information.

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