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Document Version
Peer reviewed version

Citation for published version (Harvard):
Scott, S 2022, 'Two central challenges that arise in an introduction to interdisciplinarity module (and responses to them)', *Issues in Interdisciplinary Studies*, vol. 40, no. 2, pp. 69-80.
<https://interdisciplinarystudies.org/issues/#>

Two Central Challenges that Arise in an Introduction to Interdisciplinarity Module (and Responses to Them)

Introduction

In this article, I will discuss two important challenges that appear in a module designed to introduce undergraduates to interdisciplinarity by following the research process set out in Allen F. Repko and Rick Szostak's (2021) *Interdisciplinary Research: Process and Theory*. The first challenge is the heavy burden placed on students to develop adequacy in disciplines with which they might be unfamiliar, in addition to learning a new research process and the advanced skills involved in integration. The second challenge is the late appearance, in the process, of creating the common ground; this is arguably the most difficult Step and without it integration is not possible; however, in Repko and Szostak's (2021) process, it is the eighth step out of ten, and therefore appears later on in a module. Both challenges indicate the demanding nature of this research process, which seems – to begin with, at least – to be incompatible with an introductory module.[1]

The case study is Interdisciplinarity II (hereafter "ID2"). This is the culmination of a suite of core modules designed for undergraduates of the Liberal Arts and Natural Sciences program at the University of Birmingham. All core modules on the program are discrete courses lasting ten teaching weeks (one module per semester). These are 10-credit modules that require approximately 100 hours of work in total by each student, including a weekly live session that lasts up to two hours. There are approximately 100 undergraduates in each cohort and the modules are taught by a team of four academics. We offer one of the most flexible degree programs in the United Kingdom and our students are able, with very few exceptions, to choose

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[1] A third challenge arising from teaching any interdisciplinary research process, and which also features in this case study, is that of teaching the advanced skills involved in practising interdisciplinarity. However, in this article I wish to concentrate on challenges that are unique to Repko and Szostak's (2021) research process.

modules from across campus. They thereby acquire a multidisciplinary education, and one of the aims of the core curriculum is to transform this into an interdisciplinary one.

Another aim is to prepare students to achieve the most out of their degree. In their final year, students can choose to write a 10,000-word interdisciplinary dissertation. One of the aims of ID2 is to teach them an interdisciplinary research process that can support them in carrying out this independent work. For the purpose of this study, I will not comment on Interdisciplinarity I, except to say that it is a self-contained course that bears no relation to ID2; each offers different ways of practising, and thinking about, interdisciplinary research.

ID2 is a student-centred module with minimal lecture content. It is organized around group work, and sessions are conducted in very large rooms that provide students with the space to present their research and to learn from each other. Groups are randomly assigned except that each consists of five or six students with different majors (if they have one) to ensure a mix of disciplinary specialisms.

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To make the module more accessible for students, I present it as a narrative in three stages. In Stage 1 (weeks 1-3), each group chooses which topic they will study for the duration of the module, and each student within a group chooses a different discipline that they will apply to it. This is not a problem-based module and students are not required to arrive at a solution. The aim of the module is to acquire an interdisciplinary understanding of the topic that generates new insights.

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In Stage 2 (weeks 4-7), the group work shifts from key decisions about the topic to learning about the disciplines used in the group. Having carried out research into their own discipline in Stage 1, students begin thinking about it as part of a network of disciplines. They do this by engaging in a group activity (a scenario-building exercise) and then take turns leading a

seminar. By the end of the seminar they will have identified many conflicts between disciplinary insights.

At this point, the group project splinters into individual projects that receive group feedback. Each student brings together a second disciplinary approach with their own based on whichever conflict between insights has the best potential for integration. Their objective, in Stage 3 (weeks 8-10), is to develop this into an essay. Even at this final stage, the module is organized around group work: Each student presents their interdisciplinary argument to a focus group and then continues working with their research group as they develop their argument. They work more closely with the group member whose disciplinary approach they are using in their essay; but the entire group provides feedback on the topic and integration.

There are three summative assignments: (i) a 600-word critical reflection of a text (in which students demonstrate their ability to reflect on an article or book chapter as an example of their chosen disciplinary perspective); (ii) a 500-word outline of an integration of insights from *two* disciplinary approaches; and (iii) a 1,500-word interdisciplinary essay that develops the argument outlined in the second assignment.

None of the assessments are designed to test students' comprehension of Repko and Szostak's (2021) text. The book is available to all students as recommended reading and they begin the course with an introduction to the overall process, but they are not expected to study it. Instead, they learn about it through practice; instructors introduce the process to students and relate the work they are doing to key passages in the book.

The First Challenge: The Burden of the Process

According to *Interdisciplinary Research* (Repko & Szostak, 2021), the first six steps of the interdisciplinary process are:

Commented [A8]: projects that receive group feedback: Each

1. Define the problem or state the research question

2. Justify using an interdisciplinary approach

3. Identify relevant disciplines

4. Conduct the literature search

5. Develop adequacy in each relevant discipline

6. Analyze the problem and evaluate each insight or theory (p. 77)

This sequence liberates the researcher to move into new areas as required by the investigation into the problem or question, rather than confining the question to fit the researcher's expertise. It also gives the interdisciplinarian the freedom to explore a topic from unlikely perspectives without being limited to those disciplines that have a more obvious affinity with it and which might otherwise dominate the discourse. However, in an introductory module, it also imposes a heavy burden: Students are required to learn a complex process, as well as the advanced skills involved in integration (which can be new to most, if not all, of our students). In addition, they must identify relevant disciplines with which they might be unfamiliar, conduct a literature search, and develop an adequacy in these disciplines.

This challenge of developing an adequacy in disciplines is exacerbated by the group dynamic at the start of the module when students do not know each other well and might be inclined to avoid potential conflicts. Key decisions made in the first session could therefore oblige some students to work in research areas that are new to them, while others end up in more familiar territory. Such disadvantage can lead to an unequal workload and breed resentment.

To address this challenge of the demanding workload, I have found groupwork to provide a suitable solution, but only by deviating slightly from Repko and Szostak's (2021) sequence of Steps. The first decision that students make on the module is which discipline they wish to apply

(Step 3) to their group's topic. It does not have to be their major, but it should be a subject they are confident they can both apply to the topic and teach to group members. I stipulate that two members of the same group cannot share a discipline. Of course, disciplines are broad collections of a plurality of branches and perspectives; for example, within biology, molecular biology and zoology could be applied by two group members without risk of overlap; an approach or perspective is more specific and can, for example, be a position as set out in an article, or refer to the thought of a particular thinker, or the use of a particular concept. However, it is important, on a student-centred, group-based module, to ensure that students are held accountable to each other and honor their commitments to the group. And a way of facilitating this accountability is by ensuring that the differences between each person's contribution are more conspicuous so that they and the rest of their group are all aware of the value of their contribution. My frequent refrain on the module is that it does not matter *what* each person knows, but *who* knows what. It is not a question of what knowledge a person already has, but who is best placed in the group (based on their own discipline) to fill knowledge gaps as they arise, and improve the group's collective understanding of the topic.

In the past, I used to followed the research process closely and began the module with Step 1 (Define the problem or state the research question). What I found was that students gravitated towards disciplines they were more confident using but without factoring this in when choosing a topic. As a result, some students admitted, four or five weeks into the module, that they were struggling to apply their discipline to the topic. Therefore, asking students to choose their discipline (Step 3) at the start means it informs their decision-making from the beginning.

Despite starting with Step 3, the sequence of Steps then proceeds in order from Step 1, including Step 3, which is revisited in the calibration phase (Stage 1) as students attempt to make

their disciplines *relevant*. By the end of the first session, each group will know what topic they will study and the disciplinary contribution made by each group member. The main purpose of Stage 1 of the module (weeks 1-3) is to calibrate the topic with the various disciplinary approaches. The topic must be wide enough so that it serves as a common target for multiple disciplinary framings, but also specific enough, otherwise the connections between disciplinary approaches will be tenuous, which will undermine the potential for integration. In week 2, each group agrees on a case study that exemplifies what interests them most about the topic (e.g., a group that focused on the problem of loneliness took, as its case study, the Japanese phenomenon of Hikkomori; another group that chose abortion as its topic used, for its case study, statistical evidence about the lack of clinics providing abortions in New Mexico). In week 3, they conduct research into the case study by dividing it into as many areas as there are group members–disciplinary perspectives need not inform this research as the aim is to understand the case study better and refine it further.

These are the decisions that dominate class discussions during Stage 1. Students are expected to have done some research so that they can give an informal presentation to their group to instigate discussions (e.g., which topic, which case study, and about the case study). However, I do not expect them to spend much time preparing for this, as the bulk of their work outside of classes should be spent looking for a specific disciplinary perspective that can be applied to the topic (a revisiting of Step 3). I encourage students to read widely (Step 4) in order to find a suitable academic text, which will be either a peer reviewed article or book chapter. This text either: (i) discusses a case study that is in some way comparable (as it is unlikely that they will find a text on their chosen case study); or (ii) discusses a concept, theory, idea, or method that can be applied to the topic.

Commented [A9]: case study (e.g.,…)
Give a brief parenthetical real or imagined example of what a group might choose. And see note below about topic and case study.

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Students begin to develop adequacy (Step 5) in their own discipline during the literature search, as they consider a range of concepts, positions, and theories that might be applied to the topic. Ultimately, their efforts to develop adequacy in a discipline converge on a single text. To underline the importance of this Step, the text is used in the first assignment (the critical reflection) and as required reading in their seminar. Stage 1 emphasizes the importance of disciplinarity in interdisciplinarity, as students carry out research into their discipline on their own. Of course, the interdisciplinarian thinks about each discipline as part of a network of disciplines, and this is practiced via structured discussions throughout Stage 2. These discussions lead to a repeated engagement with Step 5 in two ways: first, by comparing and contrasting their discipline with others, students become more aware of the assumptions made by their own discipline; secondly, they must also develop an adequacy in the other disciplinary approaches. A challenge this creates for students is that they must develop adequacy in how five or six disciplines deal with a particular topic, but this is compensated for by the specificity of each research area, each of which also converges on a single text, and the fact that the group is collectively conducting the literature review. Another benefit worth mentioning is that because the choice of disciplines used in the group is outside each student's control, it entails going outside their experience and knowledge, which can lead to some unusual pairings that involve more creative thinking when exploring conflicts between disciplinary insights.

Developing adequacy in disciplines is therefore practiced throughout Stage 2 in each of the seminars. In each case, it is not a question of understanding a discipline or even a branch within a discipline, but a specific perspective and a single academic text. Each group member takes a turn leading a seminar, and I instruct seminar leaders to divide them into three parts, of which the first two are: (i) to focus on a text as a way of introducing the specific disciplinary

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approach, checking comprehension; and (ii) to demonstrate, using the text, how it can be applied to the topic to demonstrate what this disciplinary perspective reveals about the topic.

As detailed in this section, a key feature of the module design is that the Steps are introduced in quick succession, and often practised in tandem (Steps 1-4 in the first 3 weeks, Steps 5 and 6 in weeks 4-8). This is advantageous on an introductory module because, despite Repko and Szostak's counsel – "*Throughout the research process, you should expect to revisit earlier work*" (p. 80) – students tend to view the process as linear and the progression to the next Step to be finite. They observe:. The nature of the group work supports this observation because collaboration determines the pace of each student's progression, meaning they must collectively revisit and practice earlier Steps together, and cannot progress through the Steps too quickly.

Regarding "developing adequacy," students should have a good understanding of their own disciplinary approach prior to their seminar, but I encourage students to view their own seminar as a learning process and make it clear that the seminar leader is the person who learns the most (I avoid using the term "expert"). However, they only have one seminar to be exposed to each of the other disciplinary perspectives. Repko and Szostak (2021) write, "Ultimately, you have to develop adequacy in each relevant discipline before reading and comprehending the discipline's insights profitably" (p. 81). In Stage 3, having chosen a conflict as the basis of their second and third assignments, students must revisit earlier Steps, including narrowing the problem (Step 1) and improving their understanding of a second disciplinary approach (Step 5). They work closely with the other group member whose discipline they are using, and they recommend further reading and provide formative feedback on their second assignment.

Admittedly, this need to progress through the later Steps before satisfactorily completing Step 5 is a compromise, because it requires students to choose one conflict that involves a

> **Commented [A16]:** Repko and Szostak's (2021) counsel -- "Throughout the research process, you should expect to revisit earlier work" (p. 80) -- students tend to view the process as linear and the progression to the next Step to be finite.

disciplinary approach they will need to study in greater detail. However, the considerable advantages of group work make this compromise worthwhile, because it is helpful for students to learn the interdisciplinary research process through dialogue with each other, and it also means they share the workload.

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The Second Challenge: The Late Appearance of the Common Ground

In an introductory module, it might be considered more advisable to promote a generalist sense of interdisciplinarity, in which students are encouraged to demonstrate any kind of convergence of disciplines. Repko and Szostak's (2021) process promotes integrationist interdisciplinarity which, as the name suggests, regards integration to be the defining purpose of interdisciplinarity (pp. 20-22). With this more ambitious purpose, it is not enough to bring different disciplines together in response to an interdisciplinary question. A new, interdisciplinary insight must be generated.

According to *Interdisciplinary Research* (Repko and Szostak, 2021), Steps 7-10 of the process are:

7.   Identify conflicts between insights and their sources

8.   Create common ground between insights

9.   Construct a more comprehensive understanding

10. Reflect on, test, and communicate the understanding (p. 77)

One of the most challenging features of interdisciplinarity for new practitioners is creativity, and to engage with Step 8 in a meaningful way, it is first necessary to engage methodically with the earlier Steps. However, as the 8th Step of 10, it appears late in a module, which limits the opportunities students have for practising it. By comparison, in Julie Thompson Klein's process,

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For some new practitioners, the biggest challenge can be understanding a disciplinary perspective and doing research (Step 4) and Step 6 and Step 7

it is 7th out of 12 (Klein, 1990) and in Newell, it is 9th out of 14 (Newell, 2001) and 10th out of 14 (Newell, 2007). This late appearance is the second challenge I wish to discuss.

This challenge is made more difficult by the ambiguity that characterizes creativity and discussions about the common ground. Writing about the decomposition of complex concepts into basic concepts, Rick Szostak argues in favor of the positive role ambiguity has in the interdisciplinary process and refers to "the *ideal* form of ambiguity" (Szostak, 2014, p. 53, emphasis added). However, when students are practicing creating the common ground for assessment, and particularly when they are approaching the end of a module, many hold the view that ambiguity is an obstacle to interdisciplinarity. Given that integration is what is new in the module, and what is most challenging for them, students want reassurances that they have made progress and are practicing integration correctly.

From my observations, the most common problem students have when tasked with creating the common ground is that their discussion about the case study abandons disciplinary constraints and they believe this amounts to interdisciplinarity. This problem can be precluded by emphasizing the importance of Steps 6 and 7. I have already discussed the first two parts of the seminars, in relation to Step 5. In the third and final part, which takes up one half of the seminar, the student who is the seminar leader compares and contrasts disciplinary insights (Step 6) with each group member in turn, and they identify conflicts between insights (Step 7). This is one of the most difficult exercises in the module because it is a lengthy and detailed critical reflection of disciplines. Other group members are encouraged to participate in each discussion, as they offer contrasting perspectives via their own disciplines, which help them critically reflect the insights being discussed.

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Responsibility for the success of seminars is therefore shared between the seminar leader and those attending. I take pressure off the student leading a seminar in three ways: first, instructors are requested not to speak during the seminar, so as not to undermine the seminar leader's confidence and authority. Secondly, the seminars are not graded because it is, first and foremost, a formative learning experience and some students have not attended a seminar before. Thirdly, I make it clear that the seminar leader is the person who will learn the most by the end of the seminar: not only by practising communicating their disciplinary perspective, but also by collating 12-15 examples of conflicts. This end goal gives each seminar a tangible focus.

Crucial to the final stage of the module is the discussion a student has with the group member whose disciplinary insight they are integrating with their own, and this occurs throughout Stage 3. However, a key exercise at this point in the module is the presentation to the focus group, drawn from other students in the room. The instructions for presentations are quite prescriptive, and students find it useful to map out the elements in an organic way. They must state the question, case study, and the disciplinary approaches used; explain, briefly, the disciplinary framings of the case study and what key insight arises with each disciplinary perspective; how these insights are in conflict with each other; what the common ground is, making sure to relate it to the conflict between insights; and, finally, the new, interdisciplinary claim. This structure eliminates excess information about the case study and focuses on the different elements and how they relate to each other. Students are given feedback from their focus groups, and are then given feedback from group members for the duration of the module, and finally are given feedback from instructors for their second assignment before submitting the interdisciplinary essay. This means that a student's interdisciplinary argument has been reviewed multiple times and by different audiences, which students find reassuring.

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Given the challenges raised in this article, a strong case can be made that the Broad Model as described in *Introduction to Interdisciplinary Studies* (Repko et al., 2019) is much better suited to meeting the demands of ID2, since this 6-Step process omits developing adequacy in each relevant discipline and creating the common ground as discrete Steps. The reason for not using the Broad Model is that, as mentioned in the introduction, one of the aims of this module is to introduce to students all the Steps in the research process that can be used when writing their final-year dissertation. However, the final point I wish to make concerns what I consider to be the most valuable learning experience in the module – becoming a kind of stranger in your own discipline – and can be successfully addressed using either the extensive research process or the Broad Model.

A common misperception among students is that disciplinary research is separate from practicing integration. William Newell (2007), whose influence is often evident in Repko and Szostak's work, characterizes this misperception when warning against reductive interpretations of disciplinary and interdisciplinary research processes:

> The process is simplified in that it assumes all the disciplines are mined separately
> for nuggets of insight before any integration takes place, and when it does, the
> integration takes place all at once. Such an impression would be not only inaccurate
> but also undesirable. Interdisciplinarians tend to partially integrate as they go,
> reforming tentative syntheses as the insights of each are incorporated (Newell,
> 2007, pp. 248-249)

Repko and Szostak (2021) quote from this passage to stress that the Steps should not be viewed discretely; they describe the relationship between interdisciplinary and disciplinary research as "symbiotic" (p. 239) at the level of integration, in which insights yielded from integration impact

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on disciplinary approaches and change them. If integration is forming before Step 7, then this symbiosis also happens earlier in the process. This way of thinking is encouraged, during the seminars, when students reflect on their own discipline as part of a wider network of disciplines.

Nevertheless, this misperception that integration is separate from preceding processes prevails and students gravitate towards these later Steps – integration is the novelty in the module, it is the purpose of interdisciplinarity, and it is assessed on two assignments – and they can be surprised and disappointed to find so much of their work in the module is confined to a single discipline. The aim of the seminars is to provide structured spaces for students to practice disciplinary research as well as the opportunity to begin thinking about integration.

As discussed at the start of this section, Repko and Szostak promote an integrative interdisciplinarity that should yield new, interdisciplinary insights. On an introductory module, this is aspirational. In practice, if a student achieves a new, interdisciplinary insight, it is an advantage but it is not one of the module's main learning goals. The main goals are for students, through practice, to develop the habits of, and to think as, an interdisciplinarian, and to know about the creative act of which an interdisciplinarian is capable. Again, focusing on the 6-Step Broad Model can also accomplish these goals.

A student majoring in political sciences, for example, relates to this discipline differently as an interdisciplinarian than when they are in a political science class. There is something inherently unsettling about the higher-order skills practiced by an interdisciplinarian: critically reflecting on a discipline so that discussions focus on the discipline itself as well as what it reveals about something; thinking comparatively across disciplines so that disciplinary perspectives are considered, not in isolation, but always in relations that reveal new strengths and weaknesses; and thinking creatively by bringing disciplinary insights into new relations. For the

Commented [A23]: Need to add the point. For example, …disciplines. Students can learn about integration, even through Step 6, by partially integrating along the way.

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Commented [A26]: capable. Again, focusing on the 6-Step Broad Model can accomplish these goals.

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new interdisciplinarian who, as a major, has been researching a particular discipline for their undergraduate career, this culture shock is a learned behavior, but such disorientation is necessary: The interdisciplinarian is a stranger in a homeland. Experiencing this disorientation is what is most valuable about the module, although I would struggle to find a student who shared this view.

Conclusion

An important challenge in any module introducing students to interdisciplinarity is the singularity of the practice. Students practice interdisciplinarity by bringing together a constellation of ideas, arguments, theories, and insights into a unique combination. Although it is a complex process, it also involves creative acts and unusual intersections. For an interdisciplinary module to have value in a student's education, it must teach skills that are transferable to other unique constellations in the future. This is the merit of using a particular process as opposed to none at all. In an introductory module, students do not need to study different theories of interdisciplinarity, and they do not need to know how one process compares with another. It is enough to understand that there is a coherent framework and to practice using it.

There are, of course, many other research processes that could have been used in this module which are designed for collaboration in teams and are more attentive to the challenges of cross-disciplinary communication. So why the commitment to Repko and Szostak's (2021) method? First, because it meets many of the requirements of an introductory module. It is a top-down approach that imposes a structure from the start and gives students a coherent framework, as opposed to a bottom-up approach to interdisciplinarity that identifies appropriate methods and then constructs an appropriate structure for the process. The Repko and Szostak framework can

be taught in a simplified way, in an introductory module, and through repeated practice students can learn it in greater depth, especially with an emphasis on partial integration through the various Steps.

> **Commented [A29]:** so you mean:
> especially with an emphasis on partial integration through the various Steps.
>
> **Commented [A30R29]:** Yes, that's right

Secondly, the framework places emphasis on the disciplines throughout the process, and therefore draws upon skills and knowledge that students already have, giving them confidence in the work for which they are most valued by the group. The decision to use group work is a response to the challenges of the research process, and collaboration is a means to an end. Yet, through discussions, students are compelled to engage with each Step of the interdisciplinary process in pursuit of integration. There are two most valuable results of this introductory module: first, giving students a methodical process which they can use in the future; and secondly, that through discussions with their peers, students experience performing as an interdisciplinarian.

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