

# Original Research

## Powering the future: Academic journals and language research

by Kenneth N. Beatty

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*The first academic journal was published in 1655 and the first peer-reviewed journal followed in 1731. Since then, academic journals have changed little in form and only slightly in purpose. Academic journals continue to increase exponentially in number in ever-emerging fields, but there are negative washback effects to current journal publication, beginning with the publish and perish principle that works against innovative research objectives, topics and methodologies. Digital technologies now offer new opportunities to rethink the process, role and function of academic journals and, in language education, to overcome typical problems such as limited experimental subject pools, dated data, time constraints, a focus on marginal ideas and static findings. This paper also suggests how academic journals and papers can be improved, particularly in the area of English Language Teaching and the Common European Framework of Reference (CEFR).*

**KEYWORDS:** academic research, experimental subjects, online journals, research methodologies, thought experiment, CEFR



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### 1. INTRODUCTION

As a thought experiment, imagine what academic journals might look like a century from now. You will likely choose one of two directions. On the one hand, you may conservatively assume that academic journals have flourished in much the same form for hundreds of years and will largely continue as they are now. They may migrate to being exclusively online, but still maintain a format based on what they generally have required for article submissions: a title, an abstract, body text and references. This kind of future journal's articles would appear in public in much the same way, going through a process of submission, peer review, revisions and resubmission and, finally, weeks or months later,

publication. Journals appearing a century from now would be either distributed for free as, increasingly, many are now, while others would follow subscription models.

Alternatively, you might consider a second direction, making the fullest use of current technological affordances to enable a different kind of academic journal, one that is multimedia (featuring audio and video), interactive (with models to manipulate), dynamic (open to revisions and additions) and perpetual (always changing yet always available).

To explain these possibilities, as well as the reasons for following this direction, this article outlines the history of academic journals and their shortcomings and

explores what an academic journal for language teaching and learning might look like, not in a hundred years, but today, making use of best research practices and current technologies to address language teaching and learning challenges.

## 2. A BRIEF HISTORY OF ACADEMIC JOURNALS

Quasi-scientific writing likely began with natural history topics, such as observations of the night sky by the earliest literate civilisations. But millennia were to pass before the creation of the first academic journal. First published in 1655, the Paris-based *Journal des Sçavans* was followed two months later by the London-based *Philosophical Transactions of the Royal Society* (Jenkins, 2019). In these two early journals, feedback loops for quality control and scientific oversight were achieved through readers' letters and successive articles that challenged and/or built on each issue's articles.

The first peer-reviewed journal arrived 76 years later, in 1731 (Jenkins, 2019), and many others soon followed. However, the idea and process of peer review – having others vet the quality of an article's research and writing – was neither quickly nor universally adopted. Shema (2014) notes that more than two centuries would pass before the leading British medical journal, *The Lancet*, implemented peer-review, in 1976.

Since then, academic journals have changed little in form and content, often for good reason. A key strength of academic journals is their standardisation of format, developed over time to bring clarity: *titles* engage, *abstracts* summarise and set out *research questions* or outline *findings*; *key words* help identify central foci; the *research format* of identifying a problem, based on what one may have learned through *observation* and/or *experimentation*, creating a *hypothesis* and conducting an experiment to test it; followed by *interpreting* the data and coming to a *conclusion*.

Together, these components help readers and researchers compare articles over time, supporting or challenging new ideas and incrementally building on the work of others.

The measure of academic journals' success can be seen in the fact that the number of journals continues to increase. Gu and Blackmore (2016), surveying science journals, note a steady growth rate of 3.3% between the years 1900 and 1944, and an increase in rate between 1986 and 2001 to 4.7%. Part of current growth is fuelled by the lower cost of entry to publishing through the creation of digital journals offered online. By 2007, the growth rate of digital online journals outstripped the

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growth rate of print journals and, by 2012, more online journals were being published than print journals (Gu & Blackmore, 2016).

In coming years, it can be expected that printing and mailing costs will drive many journals to take the first steps toward embracing online versions of their editions, and then abandoning print and moving to online journal models completely.

The embrace of online management platforms for journals is an important step toward the democratisation of research and, through it, to improved teacher education. Prior to the availability of online journals, access to quality research was an economic barrier for many researchers. This is still the case among many journals whose publishers bind articles in copyright and sell access for steep fees rather than joining in the Creative Commons, a non-profit organisation that *'helps overcome legal obstacles to the sharing of knowledge and creativity in order to address the world's pressing challenges'* (Creative Commons, 2022).

A trend among some journals is to charge fees for reviewing. For example, the non-profit *PLOS One* charges between 775 USD and 4000 USD to review and include articles, mostly in medical fields. These charges help support *PLOS's* extensive publishing; between 2003 and 2019, its seven journals published 239,625 articles (Rodrigues et al., 2020). Fortunately, other than the cost of publishing (for which international rates and subsidies are available), *PLOS* articles are open access through Creative Commons licensing and making researchers/writers' contributions free for all readers.

Prior to widespread online access, universities, libraries and individuals who could not afford costly subscriptions were denied access to the latest ideas and trends in research. A parallel development to greater access to research published online has been the enrichment and expansion of ideas by voices previously silent because of a lack of access to be able to examine, debate, refute and build on the ideas within quality journal articles. Enfranchisement of international re-

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searchers through better access to current knowledge has also helped shift language research away from an overwhelming focus on issues mostly related to European languages.

Albiladi (2019) reviewed 400 articles from prominent language journals to determine the most popular topics since 2009. The top five include Digital Literacies / Technology in English Classes (13.7%), Second Language Methodology (12.5%), English for Specific Purposes (10.5%), Testing and Evaluation (8.7%), Language Planning and Policy (8.25%).

Among these five, *Digital Literacies / Technology in English Classes* is understandably important because of societal shifts toward online and blended learning as digital technologies and Wi-Fi bandwidth accommodate live video and greater interaction between students and teachers. The growth of online during the Covid-19 pandemic has likely skewed such numbers upward. It is even more important than the percentage suggests if *Computer-Assisted Language Learning*, seventh on the list at 6.5%, is added to the *Digital Literacies / Technology in English Classes* total. Other emerging themes further down the list are ones that have been sometimes ignored in previous decades and include gender, race, plurilingualism and translanguaging (Albiladi, 2019).

Of the 400 articles examined, 188 were qualitative, a further 84 were mixed methods and 128 articles were quantitative (Albiladi, 2019). The study did not cover language journals published in other languages, but special issue topics frequently arise, such as in response to teaching and learning in the time of the Covid-19 pandemic. Examples of recent *TESOL Quarterly* special issues are *Equity for Students Learning English in Dual Language Bilingual Education* (Dorner & Cervantes-Soon, 2020); *At the Cross-roads of TESOL and English Medium Instruction* (Pecorari & Malmström, 2018); and *Complementary Perspectives on Task-Based Classroom Realities* (Jackson & Burch, 2017). Academic journals' featuring both current trends and special issues shows an awareness of the importance of addressing teacher

needs with ideas that can be implemented in the classroom. Doing so in a timely manner is possible because of the speed of online submission, editing, and publishing of articles.

### 3. NEGATIVE IMPACTS

In examining reasons for the growth of academic journals and researchers' participation in them, there are several negative factors. The first and largest negative factor is the so-called *publish or perish* principle. For many universities, publication in prestigious journals is a requirement for hiring, maintaining one's position, promotion and tenure. Reinero (2019) identifies the quantity of publications as a statistically significant metric for employment opportunities.

By sifting through stacks of CVs, and in line with findings from others (Pennycook & Thompson, 2018), there appears to be a positive correlation around .24 between the year an assistant professor was hired and the number of publications they had, suggesting that today's early career researchers need to publish more and more.

In a hands-off approach among university administrators, the research itself is sometimes not deemed as important as publication. Rather than a committee approach evaluating the particular merits of each published article by a job applicant, the task is deferred to the editors of journal publications; if a job applicant has published a number of papers in a top journal, then the applicant is assumed to be of an equally high standard.

A problem with this approach is the challenge most researchers face in having a paper accepted by a top journal. For example, a 2007 survey suggested that *TESOL Quarterly* only publishes 8.5% of submissions (Egbert, 2007). It is likely that in the years since that survey was done, the percentage may have dropped even lower.

Compounding this problem is the fact that after waiting a month or several months for one or more rejections, a paper may begin to become stale; research findings from a year or more ago can taint other journals' acceptance of what they may consider to be outdated research.

Conversely, researchers submitting to less prestigious, low-circulation journals may have their submissions quickly accepted but have their contributions overlooked by other researchers and frowned upon by university hiring committees. In other cases, large research groups with multiple authors may look to recycle findings across multiple journals. It is common to

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find in, say a group of seven researchers, seven publications on similar sub-topics, using the same data, with each researcher taking the role of lead author to artificially boost the group members' curricula vitae.

The pressure to publish also leads to tricks that ethically challenged researchers employ to increase their chances of publication. For example, some carefully reference the articles of a journal's editors and known reviewers, even if these editors' and reviewers' contributions are not vital to the paper. As the Citation Index is important to many researchers for improving academic standing, there may be a temptation for editors and reviewers to approve an article in which one's own articles and books are mentioned. This works in the opposite way as well: some reviewers refer authors to their own articles and books, suggesting they cite them in revisions. Authors who fail to do so risk finding their revised manuscripts dismissed.

The expectations of academic journals may also hamper original ideas. In 1950, John Nash, age 22, submitted his PhD thesis, *Non-Cooperative Games* (Nash, 1950). At just 32 double-spaced pages, with only two references, it is uncertain whether it would be accepted by a doctoral committee today, although brief theses in mathematics are not uncommon. Totaro's (1992) thesis was only 12 pages, featuring eight pages of actual math with 11 references.

Similarly, Nash's (1951) subsequent nine-page article for the *Annals of Mathematics* included only five references with three of his own recently published papers added. Yet his article had enormous impact, cited over 12 thousand times, changing a great many fields within and outside of mathematics, leading to multiple awards, including the Nobel Prize in Economics.

The narrative of Nash's (1950, 1951) slender but impactful contributions begs the question of whether the format of academic journals may have become fossilised, discouraging original thought and innovative approaches in favour of standardised topics and methodologies that become self-referential within a dis-

cipline and reflect common thinking rather than explore new paradigms, simply because more pedestrian ideas are less challenging to review.

#### 4. CHALLENGES ON LANGUAGE ISSUES

In language education, academic journals face particular problems based on the research typically undertaken by classroom-based researchers. These include small experimental subject pools, time constraints, a focus on marginal ideas, outdated references, and static findings.

Language teachers/researchers often rely on small experimental subject pools. Typically, the research pool is the teacher-researcher's own students, either a single class, or a few classes, one of which might be a control group receiving no experimental treatment. The problem is that these small group numbers inevitably lead to researchers either being constrained to qualitative measures or using quantitative measures ineffectually. The limited data are usually such that statistical significance cannot be measured and/or applied to a larger population with reliability.

Time constraints are inherent in many academic studies (Korovina, 2020). For studies of language students, the time frame is often a semester or perhaps a school year (i.e., around eight months). Despite the understanding that language acquisition is a long-term process, with learners experiencing an unpredictable mix of advances and setbacks, longitudinal studies of students are often problematical. Student attrition rises with the length of a study. Students may absent themselves pass out of the teacher-researcher's classes, graduate and leave the institution, or leave for other reasons, such as a move to a distant place, or even a general unwillingness to continue to be a test subject in an experiment or set of observations for which they receive no direct benefit. The consequence is that some teacher/researchers arrive at a subject pool of zero before the study is properly concluded, often making much of the data collected irrelevant.

Longitudinal studies, despite their value, are also a challenge to the current academic journal structure because they extend the wait for publication and the recognition that comes from it (Cherkunova, 2021). A common solution is to present intermediary findings before project completion but, for small studies, submissions of these findings can appear inconsequential.

With limited resources, classroom researchers often focus on marginal ideas, atomising teaching and learning issues to look for manageable research that might

yield small and often locally practical solutions. Coupled with small group sizes and time constraints, this type of research is often structured in the form of a teacher making a small change to methodology, technology or materials, testing it with one or two classes, reviewing short-term and statistically insignificant measures of improvement, and eliciting student approval in the form of Likert satisfaction surveys. Such satisfaction surveys can be wildly unreliable due to the principle of acquiescence bias (or agreement bias) – subjects telling researchers what they expect they want to hear. Toor (2020) points out that acquiescence bias is particularly rife among collectivist societies and among the poorly educated.

Hatch and Lazaraton (1991, p. 1) note that research is '*the organised, systematic search for questions we ask*'. Nunan (1992) suggests research has three components: (1) a question, problem or hypothesis; (2) data; and (3) analysis and interpretation. But if the question is not worthy, the data not dependable, the analysis and interpretation, in turn, is certain to fail. This is compounded by the inability of researchers to ever hope to research a topic completely and comprehensively. Despite the inclusion of so much research online, the constant expansion of content means that wading through it to find significant references is increasingly challenging. One consequence is that many articles tend to reinvent the wheel – attempt to solve problems that have already been extensively researched and for which credible solutions have already been put forward.

Once an article does appear online, its findings become static. Sometimes, researchers will revisit their own or others' research, doing replication studies to examine differences over time or across geographies, but such studies are relatively rare.

## 5. RETHINKING THE ACADEMIC JOURNAL

Technology now offers new opportunities to rethink the role and function of academic journals. It is already encouraging that the move to online publishing has sped up the publishing process. Online delivery means that printing and mailing times and costs have been largely eliminated. Access for students, researchers, and teachers has also improved. Gu and Blackmore (2016) estimate that more than 30% of online journals are now freely available through open access websites. Prior to the advent of the Internet era, this percentage of academic journals with free access would have been close to zero.

Moreover, in terms of shortening the time between researchers doing their work and their findings reaching readers, the article review process has become increasingly automated through online tools (eJManager, 2022). These tools allow for a paper to be received by a journal editor by email and then sent to a potential reviewer moments later. In turn, the reviewer has a few days to signal a willingness or unwillingness to look at the paper, with reminders automatically sent if a response is not received. In practice, many reviewers tend to respond immediately, on receipt of the email request. Several reviewers can be contacted at the same time, to get both different critical perspectives and a rapid consensus on a paper's suitability for publication.

Once reviewers have expressed interest, they are usually given a few weeks to complete their reviews. Once the reviews are completed, they are shared through an online form that allows reviewers to offer detailed line-by-line feedback on a paper, or simply offer general comments and their decisions on whether or not to reject the paper, ask for revisions, or publish as is. Editors then consider the reviews, as well as other factors such as an issue's available space, and contact the paper's author(s) by emails.

When one considers the traditional mail times that would be required for each step in the process outlined above, it is easy to understand how getting an article published could previously have stretched to a year or more. The above-mentioned seminal article by Nash (1951), for example, was likely received and accepted without undue delay, perhaps without amendments, but 11 months and nine days elapsed before it was published.

What could a paradigm-shifting academic journal look like, improving on current academic journals of language teaching and learning, reversing negative washback effects inherent in academia today, such as putting a priority on publication over meaningful research, for the sake of employment? How could these changes improve research topics and methodologies? As mentioned in the introduction, such an academic journal would be multimedia, interactive, dynamic and perpetual.

Current journals, even online ones, shy away from many of the simplest multimedia affordances of digital information. For example, most online journals cling to black text only, even though the use of colour could be used to highlight ideas in different ways, improving readability and better conveying information. Applications could be in differentiating annotations from

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text, identifying different speakers in complex discourse analysis transcripts, or separating arguments. Colour could enhance charts and illustrations and add clarity to photographs.

A digital journal could also incorporate audio, video and animation clips directly into the body of a text. Instead of describing a classroom, an explorable panorama photo could show it in greater detail. Transcriptions of students speaking could include embedded audio or video for other researchers to confirm their accuracy, or to use the base materials for further study of other aspects of classroom conversation. Virtual reality and augmented reality applications could be linked directly to online articles both as a way to explain the applications and to allow readers to immediately evaluate their efficacy.

Academic journals – even those online – are often static. Once they are published, they are not modified. However, they could easily be updated and be more interactive through the inclusion of tools and applications. For example, a journal article discussing audio file speed and pitch could include samples of spoken text with speed and pitch controls. Readers could work with the models to modify the settings as they consider the issues being discussed and even replicate the study using the audio clips, varying speed and pitch with their own students to see if the same results could be reliably obtained. Another aspect would be the opportunity to manipulate models by including additional variables (Petrosyan & Grishechko, 2021).

Integrating large sets of such data could happen between the monthly or quarterly issues of existing journals. A model of perpetual contributions and editing could be implemented, as is already done in many Wiki applications (Vanderbilt University, 2022). Academic journal articles could be refined, added to, and discussed perpetually, with pop-up comments moderated by users. It is an approach that could turn a single paper into an international research project with thousands of researchers and countless experimental sub-

jects. Rather than relying on a teacher’s own small numbers of students, the act of sharing a particular methodology and providing an online forum for pooling results would create a database of ever-expanding data points for better understanding of the key issues facing language teaching and learning.

## 6. A PRACTICAL EXAMPLE

To extend the thought experiment mentioned in the introduction, the following outlines the steps from a teacher’s initial question, through the extended life of an interactive digital article.

Currently, research is undertaken and articles submitted largely on the impetus of researchers who have personal interests or stakes in particular language teaching and learning problems and issues and look for ways to explore them through research or, sometimes, a survey of the literature. In other cases, there are calls for submissions on special topics, given by a journal to react to changes in society or technology or to redress deficits, such as a lack of attention to less-researched languages or the struggles of particular groups of students.

Instead of the choice of topics being driven by researchers and editors, a new digital journal might choose at least some of its topics from among suggestions raised by classroom teachers. For example, a teacher or student reader might be curious about the relationship between hours of instruction and performance on standardised tests, with reference to progress through the Common European Framework Reference (CEFR).

After the topic or question is raised, it could be posted to an online area of the journal where other teachers and researchers could rate each topic according to their interest and consideration of its significance to teaching and learning. Rating could be done as simply as adding likes, in the format used by micro-blogging sites like Twitter, or through a one-to-five-star format, as used in online reviews. Those topics of greatest reader interest would rise to the top, while those of limited interest would sink to the bottom of the list.

While this may seem like a populist approach to research, it would be a way to ensure that key issues of the greatest importance to educators were explored without ignoring more arcane topics that may have limited immediate interest, but which nonetheless provide useful contributions to the field. It would bridge the work of classroom educators, who tend not to do as much published research, with university-based re-

searchers who may not do as much teaching or who may never have taught kindergarten to grade 12 students. It is an irony that many teacher trainers have never themselves taught a class of target audience students. Instead, many have gone through Bachelor's, Master's and PhD degrees in areas such as applied linguistics with limited practical exposure to current classroom pedagogy or the real-world non-pedagogical problems such as a lack of funding and training opportunities faced by classroom teachers.

Once a topic has been nominated and selected for future journal publication, it could be dissected by researchers eager to explore sub-topics in keeping with their particular areas of expertise, such as the time necessary to improve discrete reading, writing, speaking and listening skills in terms of the CEFR scale.

One subtopic could be an analysis of the commonly held belief that to move from one level of the CEFR to another level requires a set number of hours of instruction and that these hours of instruction can be reasonably predicted for most students. As a widely held belief and frequently published standard, Cambridge University Press (2018), claims that it takes 90-100 guided learning hours to achieve an A1 competency in English and a cumulative 1030-1450 guided learning hours to reach a C2 level. However, the justification of these estimates comes from the following sources: *'These figures are based on (a) our experience of developing courses that work for schools and colleges around the world; (b) the views of a number of experienced professionals in the ELT field; (c) reference to other sources such as the ALTE guidelines and research such as Elder and O'Loughlin (2003)'* (Cambridge University Press, 2018, p. 10).

From this explanation, it is clear that these estimates have not been empirically tested. Cambridge University Press's (2018) 'experience developing courses' might be considerable, but it is likely that if the development of textbooks is based on pre-held assumptions about the length of time it takes to move from one level to the next, the materials themselves become part of a self-fulfilling prophecy. That is, because they expect it takes students X number of hours to complete a course, the books are created to fill that same number of hours.

Tests, after completing such texts with perfect attendance, should theoretically show a 100% success rate in reaching the level objectives, but this is not the case. Instead, many students fail to smoothly progress from one level to the next, despite sitting in the same

classrooms with the same materials and teachers for the same amount of time as more successful students. This being the case, it is obvious that other factors are at play.

Similarly, Cambridge University Press's (2018) second point, based on 'the views of a number of experienced professionals', invites scrutiny. As with the first point, the information is not quantified in any way. Just as one would be curious to know how many courses and textbooks Cambridge based their findings on, and which ones in particular, it would be of interest to know how many experts were consulted, their expertise and experience, particularly in terms of teaching different levels and ages of students from various language groups.

The Cambridge University Press (2018) justification of hours of instruction also points to the Association of Language Testers in Europe (ALTE). Based on its name, it is reasonable to believe that ALTE has a European-centric view of assessment with the CEFR. A review of its membership (ALTE, 2022) shows no members from outside Europe and its bordering Slavic countries, that is, none from Africa, Asia, Australasia, the Middle East, North America or South America. Members might have expertise in these geographies, but if these and other informants of Cambridge University Press are all of European backgrounds, it could raise another research question to see whether the CEFR findings are based on language teaching, learning, and testing assumptions that would be considered reasonable in other parts of the world outside Europe where English is taught. Socioeconomically, historically, educationally and culturally, Europe is not the same as the rest of the world.

A larger area of concern might be looking at the CEFR itself, which has been criticised as being more anecdotal than empirical in its findings. Foley (2019) cites this lack of theoretical background: *'Hulstijn (2007) indicated that the empirical foundations of the CEFR scales were based on the judgements of teachers and experts and not on Second Language Processes or research. Poszytek (2012) warned publishers not to use CEFR's global scale or 'can do' concept to sell their textbooks as they were often misaligned with the CEFR scales and had limited theoretical background'* (Foley, 2019, p. 31).

Fleckenstein et al. (2018) point out that the CEFR is also imperfect in terms of teachers' use of it to assess students impartially: *'Teachers' self-reported familiarity and experience with the CEFR was not found to predict their judgment accuracy. However, this may be due to*

*ceiling effects in teachers' self-reports. In any case, the teachers have not received explicit and systematic training on CEFR-based student assessment'* (Fleckenstein et al., 2018, p. 19).

Fleckenstein et al. (2018) also identify the need for teachers to have more rigorous CEFR training, and note that 'Moonen et al. (2013) were able to show, having little experience with the CEFR is a reality in foreign language teaching' (Fleckenstein et al., 2018, p. 91). This, as with the other points, suggests the need to attack the question of hours of instruction required for each CEFR level from various vantage points, breaking down the question into multiple research questions.

Once research questions on the theme of hours of instruction and CEFR progress have been developed, the next step would be for interested parties to do initial research and create papers with a title, abstract, introduction, a literature review, an outline of the research methodology, the results or findings of the research, a discussion of the importance and/or applicability of the results, a conclusion, recommendations and references. At some point in the paper, usually in the introduction or at the end of the paper, there would also be a discussion of the limitations.

Considering this description of a typical paper, one traditional expectation is that the finished and edited result would be static, other than the possible addition of errata comments.

So, how might each of these article components actually become more dynamic in a new digital journal in practice?

The *title* of the paper would likely remain static but could be infused with meta data tags (as done with microblogging hashtags) that link the paper to other papers being published on the same theme. As with hashtags, these links could grow over time as more papers were published. This would create a parallel thematic index, identifying relationships among papers.

As with other portions of the paper, the *abstract* would exist in two or more versions. The original would always be accessible, but other versions, updated by the papers' original authors or by others with the original authors' permissions, could show refinements of the ideas to better represent subsequent additions, as outlined below.

The *introduction* of the paper could be updated over time to incorporate new insights or to include additional research subjects. For example, a paper written on Russian students' progress through CEFR levels might be extended with data from other countries.

In a traditional article, a *literature review* is static. But, a next-generation journal could constantly update the literature, adding new books and articles, and newer versions of those references already cited. Along with the citing of authors and works in a literature review, there would need to be annotations of how a particular piece of writing applies to the current study. In essence, every article could have its own annotated bibliography. New references could also be added both for new additions to the article, as well as for further and different explanations for existing arguments and conclusions in the original paper.

There are precedents for including new perspectives, in the form of in-text commentaries, that are often appended to religious texts. A challenge with these commentaries is how to display them on the same page. Print solutions have included dividing off the commentaries with lines, the use of footnotes, the use of different fonts and point sizes and, less commonly, the use of a colour, often red. A digital journal could use all of these but also use hypertext links to additional text, so that the reader was not distracted when reading the original text.

An *outline of the research methodology* is useful for replication studies, where the methodology is reapplied at a different time, and sometimes in a different geographical location. Traditionally, however, there has never been a guarantee that such replication studies would be published in the same journals as the original. A next-generation journal would encourage such studies, if only by linking them to the original article. Moreover, data-driven methodologies with clear opportunities for replication could be incorporated into dynamic models.

A dynamic model would be one in which new data could be continuously included to bolster the significance of the findings. For example, instead of relying on the limited data of a few classes of students progressing through CEFR levels, an open source model within a paper could attract contributions from anyone interested in the topic but who might not want to write a separate paper on the issue. Anyone reading the original paper could instead look back on their own records to answer simple questions to collect data on key variables such as the number and ages of students, entry assessment of CEFR levels, number of hours of instruction, and success/lack of success in achieving the next CEFR levels, along with any anecdotal information that would help make better sense of the data, such as whether instruction was face to face or online.

Sharing this anonymised information along with time (i.e., date) and geographical markers (i.e., city, country) could be entered on an online spreadsheet, new entries vetted by the original paper's authors, and added to the dynamic database of the model.

Moreover, such a model could be downloaded and run with various manipulations to see what results it offered. For example, a researcher might look through the progress of hundreds of thousands of students and sort them by CEFR entry level, age, city, country, gender, level and other factors identified by the article's original authors or other authors in subsequent articles that build on the findings.

Most usefully, the data might reveal positive outliers – groups of students taught by particular teachers who progressed at a faster rate than the norm. If other variables were found to be within the norms of other data points, it would signal opportunities to investigate these teachers' teaching methods to see if they employed pedagogies that could be employed more widely.

In a traditional journal article, the *results, or findings, of the research* are static and provide a historical snapshot of a fixed group of subjects in a particular time and place. However, in a dynamic journal model, the results could be constantly reinterpreted. For example, it might reasonably be expected that students from countries/language groups that do not employ English alphabets might progress at a slower rate for the initial CEFR levels (as they learn and internalise the alphabet) but then progress at a rate closer to the CEFR norms as they move through higher levels.

Another issue is the spacing of time between classes. In some schools, only a few hours a week are set aside for English instruction. Other intensive programmes might feature 40 hours a week. At the end of 100 hours of such instruction, it is unlikely that the language gains would be equivalent, as determined by CEFR test scores. Programme duration could be another variable worth exploring, as would follow-ups with students who had achieved certain levels.

These and other insights would help drive the creation of more realistic teaching and learning materials. For example, if it was found that at the A1 level, it took non-English-alphabet students, on average, an additional 20 hours of instruction, that could be incorporated into the textbook and digital learning materials, as well as into class scheduling. Conversely, empirical data obtained from thousands of teachers of hundreds of thousands of students might also challenge ideas about how

*'Existing journal editors may not see advantages in branching off into higher levels of interactivity and researchers may be cautious of writing articles where their ideas may be overwhelmed by additional data and commentary'*

long higher-level courses should be and whether as many hours need to be set aside for them as is currently believed.

A discussion of the importance and/or applicability of the results usually features static conclusions, narrowly drawn from the authors' own experience. In a new digital journal model, a moderated discussion forum could be open for re-interpretations of the data and innovative findings, as well as new questions. A discussion forum might be a venue for the addition of new references, hypertext linked to full source materials.

The *conclusion, recommendations, and limitations* for an online digital journal article would be tentative. Although they could be written for the initial article, they might be subject to change as more data was gathered and interpretations changed.

## 7. CONCLUSION

The above ideas for a new type of online digital academic journal may happen over time but, in discussing why change takes so long in academia, Arbesman (2012) suggests personal reasons often trump the common good: *'Data are hoarded, scientists refuse to collaborate, and grudges can play a role in peer review. There's a lot at play'*. In much the same way, existing journal editors may not see advantages in branching off into higher levels of interactivity and researchers may be cautious of writing articles where their ideas may be overwhelmed by additional data and commentary.

Publishers, editors, researchers, universities and other stakeholders are invested in the continuance of the current academic journal structure. A new academic journal paradigm would also require a new paradigm for how research and contributions to knowledge are made and credited for consideration by academic employers. In future, a system of micro credits, perhaps recorded in Blockchain transactions, will better reward researchers for minor contributions to meaningful large-scale research projects rather than meaningless contributions to minor small-scale research efforts.

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