IFMSA Policy Proposal
OpenAccess, OpenEducation and OpenData

Proposed by Team of Officials
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Policy Statement

Introduction
Scholarly material is essential for research and education. Committing to making high value scientific knowledge accessible to researchers, scientists, entrepreneurs, and policy makers worldwide is a major step towards better health outcomes for all. Yet, cost barriers or use restrictions often prevent health professionals worldwide - and scientists from all areas - from engaging or consulting the very materials that report scientific discovery. Over the past decade, Open Access, Open Education & Open data have become central to advancing the interests of researchers, scholars, students, businesses and the public. Yet, while consulting academic journals, students face limited access to published research output, data and papers because of very high fees. The high cost of academic journals restricts the use of knowledge. A vast amount of research is funded from public sources – yet taxpayers are locked out by the cost of access.

IFMSA Position
The International Federation of Medical Students’ Associations (IFMSA) firmly believes in the importance of openness across all published research outputs (including among others, all online research output, peer-review and non-peer-reviewed academic journal articles, conference papers, theses, book chapters, monographs). Thereby IFMSA believes in the ability of openness to improve the educational experience, democratize access to research and education, advance research and education, and improve the visibility and impact of scholarship. IFMSA firmly supports:

- Open Access, referring to the immediate online availability of published research outputs free of restrictions on both access and use (e.g. certain copyright or licence restrictions)
- Open Education Resources, defined freely accessible, openly licensed media, text and other digital assets useful for learning, teaching and research purposes that everyone is permitted to freely use, adapt and share
Open Data, defined as data that can be freely used, shared and built-on by anyone, anywhere, for any purpose without restrictions from any mechanism of control (e.g. copyrights or patents).

Call for Action:
Therefore, IFMSA calls on:

Governments to:
- Adopt policies that ensure Open Access to publish research output and to underlying data as appropriate.
- Ensure that research receiving government funding is made open access; by making it a condition of said funding, and providing additional funding to any author charges if appropriate
- Invest in programs that support the creation and use of Open Educational Resources

Universities and medical schools to:
- Adopt policies that ensure Open Access to their faculty’s research outputs, including Data and other educational resources where appropriate;
- Reward researchers for making research openly and immediately available, rather than waiting for higher impact journals to approve papers
- Accelerate efforts to promote open resources, technology and teaching practices in education through deployment of free and open source software and providing the necessary training to staff and students;
- Support the use and creation of Open Educational Resources

Researchers, educators, and scientists to:
- Publish in Open Access journals, and/or deposit their peer-reviewed manuscripts in Open Access repositories and make underlying data openly available as appropriate;
- Seek and assign Open Educational Resources in place of expensive, traditional learning materials whenever academically appropriate and suitable for the curriculum

IFMSA National Member Organisations (NMOs) and medical students to:
- Support and initiate awareness and projects promoting Open Access, Open Data and Open Education
- Display licensing information on IFMSA produced documents and other materials, using Creative Commons licenses
- Join or renew membership of the Right to Research Coalition, which state that no student should be denied access to the research they need.
Advocate to supervisors for research projects and research output to be published in open access journals or repositories
Advocate, as the voice of (medical) students, for the importance of Open Access, Open Data and Open Education for students worldwide to accomplish available, better and more efficient education.

Position Paper

Background
Scholarly material is essential for research and education. Yet, cost barriers or use restrictions often prevent health professionals worldwide - and scientists from all areas - from engaging or consulting the very materials that promote scientific discovery. Over the past decade, Open Access has become central to advancing the interests of researchers, scholars, students, businesses and the public. Yet, while consulting academic journals, students and researchers face limited access to research data and papers as a result of the high fees which their universities can’t afford. A vast amount of research is funded from public sources – yet taxpayers are locked out by the cost of access.

Discussion
Open Access is a well-established, but underutilised alternative to the traditional closed, subscription-access system of scholarly communication. Open access makes the results of high quality, published scholarly research available online for free, immediately upon publication, and removes barriers for scholarly and educational re-use. There are two major forms of open access, gold and green. Gold open access takes the traditional format of a peer-reviewed journal, with the exception that no payment is needed to access the published research. Green open access is an alternative system, whereby a research paper is deposited in an open access repository of papers. This may be submitted before, alongside, or after peer review and publication. Such repositories may be institutional or field orientated. About 90% of journals now allow researchers to deposit articles in open access
repositories (green open access). However, only 10 to 20% of authors do so (1). To realise the benefits of open access, this gap must be closed.

Open access provides numerous benefits to authors, readers, universities, libraries and the public alike.

Readers
44% of basic research produced in the US is at least partially publicly funded (2). Once that research is published, the traditional subscription-access model means that those who contributed to the research (taxpayers, institutions and researchers performing the research) are forced to pay again to access the new knowledge they funded. Meanwhile, the commercial subscription journals make a profit from publishing the publically funded research. This system is unethical, untenable and impedes the creation of new research, especially by those who have financial difficulty in accessing journals – creating a knowledge and research output gap mimicking that of the existing wealth gap in research.

Open access allows readers to access research without paywalls, providing barrier free access for those who the research is produced for.

Libraries
Although unsupported by any primary data, many news sources and universities say that the cost of journal subscriptions have been rising above inflation (3) and prestigious and wealthy universities in the west have been struggling to pay the costs associated with journal access for their students and academics (4). This leaves institutions unable to access parts of the scientific literature, limiting the spread of knowledge, and resulting in new research is not based upon the strongest possible foundations. Since these barriers are compromising learning and research occurring in wealthy, western universities; the effects upon universities with smaller budgets in lower socioeconomic countries is likely even larger.

If all research was released as open access documents, this would democratize scientific and medical research; putting countries on a more equal footing. The only barriers in accessing research would be those inherent to the internet; censorship, language, connectivity and accessibility.

Researchers and universities
The careers of researchers depend upon the success and visibility of their research, often measured by citation numbers. Many papers have shown that open access articles are cited
two to three times more often than articles in subscription journals (5). Therefore, in a ‘publish or perish’ scientific culture, utilizing open access journals or repositories allows researchers to increase the reach of their work, build prestige and enhance their career. This positively impacts upon the prestige and research output of universities that employ them.

Universities and employers that mandate open access will also benefit from the enhanced research and career of the researchers they employ. Moreover, universities, as well as other employers have a large role to play in increasing the number of open access papers; although only 10 to 20% of authors submit their work to open access journals/repositories, the large majority of authors would self-archive if required by their employer (6). Text and data mining techniques have been developing in recent decades (7). However, they have not been used to their full capability, as many articles are still locked away behind paywalls. Open access would remove technological and financial barriers, allowing these technologies to blossom and provide new insights into previously published research.

Public

The public are becoming increasingly scientifically and medically curious. The culture of doctor knows best is slowly eroding. Patients regularly search the internet for information on their conditions and treatments. When they search for this information; the information they find freely and quickly is misinformation, espousing the benefits of sham therapies like homeopathy, acupuncture and exclusion diets. At best, they are exposed to these ideas, at worst, it persuades readers and results in potentially life threatening delays and refusals of treatment.

At the same time, the public are becoming increasingly scientifically and medically literate. When they search for health information, what they should be accessing free and open literature that has been carefully peer-reviewed. They should be able to access accurate information that informs them, and benefits discussions they have with their physicians. At the moment they can’t; because the majority of papers and articles that would provide them with this are locked behind a paywall.

Open Education Resources

Something clearly related to, but distinct from, Open Access are Open Educational Resources (OER). Open Educational Resources are high-quality openly licensed media, texts and other digital assets, often peer-reviewed, useful for learning, teaching and
research purposes that permit their free use and repurposing by others. (8) This is different from Open Access as Open Access is referring to scholarly literature freely available via an open license, while Open Educational Resources is referring to teaching and learning materials freely available via an open license. (9) Simple benefits of OER are for example that resources can be translated and adapted by lecturers to suit the specific needs of students worldwide. Another example would be that, without price barriers, students are free to incorporate materials beyond those assigned by traditional learning institutes, as universities, and continue learning after their formal education is completed (10).

The OER movement started around 2001 when the Andrew W. Mellon and the Flora Hewlett foundation funded the MIT’s OpenCourseWare (OCW). This is an initiative that provides more than 1700 courses on graduate and undergraduate level open access. A warmly welcomed initiative that inspired hundreds of other universities to contribute themselves with open resources. This OER movement is one of the series of building blocks that helps providing a transformation in the way we provide learning and education. A transformation needed as there is nowadays a global growing demand of education as a result of a fast changing world, as identified by Sir John Daniel. In this fast changing world there are only a few people that will have fixed single careers, in contrast people are more likely to follow a path including multiple careers. However a multiple career path means that much of what we have learned years earlier will not be the things we need to know. There is therefore a continuous need to acquire new skills and knowledge. Despite these changes it is unlikely that resources to build enough campuses etc. will be available (11). Next to that knowledge and educational opportunities are unlikely to be evenly distributed due to factors as poverty, limited economic opportunity, deficient healthcare, oppression and inadequate education access to knowledge. Fortunately the internet has left a visible mark on education resulting in the OER movement using information technology to equalize the distribution of high-quality knowledge and educational opportunities for all throughout the world. (12) Interestingly the Studies have shown that OER can produce learning outcomes exceeding those of traditional materials. (10)

**Open Data**

Data is the raw resource on which all major scientific discoveries are built. In the current age, and in the context of an ever-developing big data and data science knowledge, access to high quality data is a necessary step to high quality research and progress in Health, Life
and Social Sciences. (13) Today, most of the data collected by research laboratories, health institutions, universities, and other drivers or innovation and knowledge, is scattered around the globe, in a variety for formats, and stored on millions of computers. Although some well-known projects – including the Large Hadron Collider (LHC) and Human Genome Project (HGP) – have made their data public accessible, and resulted in accelerated data analysis and scientific progress as a result, most data is currently stored behind layers of firewalls, and data sharing isn’t the norm (13).

Simply making data open to the public isn’t enough to make that data useful to the scientific community, and drive progress. OpenData requires an approach that makes it both “technically open”, i.e. available in a machine readable standard format that can be retrieved and meaningfully processed by a computer application, and “legally open”, i.e. licensed in a way that allows commercial and non-commercial use and re-use without description. (14). Committing to making high value healthcare, and overall scientific, data open accessible to researchers, scientists, entrepreneurs, and policy makers worldwide is a major step towards better health outcomes for all.

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